SOILS AND INTERVENTIONS

By

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Linus Lancaster

Soils and Interventions

Copyright Statement

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Dissertation Abstract

The problem that I have identified during my research for this dissertation is the quantifiable depletion and exhaustion of large percentages of the world's soils through human activity in agriculture and other industrial practices. In the course of researching this problem I have looked closely at some of the primary causes, and a range of proposed and applied solutions in the field of ecology. The primary focus of the research has been in looking at how artists have responded to ecological issues and have engaged in environmental activism in their practices. Integral to the research has been direct participation in collaborative art practices that investigate and strive to raise public awareness about issues related to soil ecology. It has proceeded through reading established texts, interviewing expert practitioners, publishing my findings, and presenting at numerous conferences, concurrently with direct participation in ecologically oriented practices, related artistic projects, professional art exhibits, activist events, and working in the field of professional organic farming. During the research phase I attended nine Planetary Collegium Sessions with fellow researchers and received valuable direction from supervising professors. The result is a written, theoretical dissertation that documents the research through text and photography in seven chapters. It has also produced a body of sculptures and documented physical experiments and performances that are motivated by, and speak directly to issues of soil ecology. The efficacy of the artwork that has been made in the course of researching problems in soil ecology comes from its continuation of, and direct participation in, established, contemporary art projects and movements that have had a demonstrable influence of society. The contribution that it makes to new knowledge is by addressing in unique ways the emerging subject of soils, which have tended to be overlooked in many ecological discussions, and in so doing it also brings to bear a unique combination of influences in its practice. These include: Art practice, Situationist performances, Core Shamanic practice (as developed by Michael Harner), soil science, inspiration drawn from a number of continental theorists, participation in sustainable agriculture, and political activism, applied simultaneously in a transdisciplinary body of work described herein specifically on behalf of soils. In this endeavor the dissertation and its body of produced objects and performances has also sought to blur some of the conventional lines between theoretical research, contemplation and practice, as appropriate to a trans-disciplinary project. Numerous discoveries have been made in the course of the research, chief among them that the new transdisciplinary approach to soil studies that my collaborators and I have taken turns out to be of necessity if we are to avert large-scale collapses of agriculture due to soil degradation on a global scale in the course of this century.

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List of Plates

(All artwork and photography by Linus Lancaster unless otherwise noted).

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Author's Declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee. Work submitted for this research degree at the Plymouth University has not formed part of any other degree either at Plymouth University or at another establishment. Relevant academic seminars and conferences were regularly attended at which work was often presented; external institutions were visited for consultation purposes and several papers prepared for publication.

Publications:

Lancaster, Linus. *The Real Dirt on Land and Location*. Trondheim: Intellect Books, 2010.

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Lancaster, Linus & Frederick Young. *Listening to Animalities, Soils, and Shipwrecks (Phase 2)*. Lisbon: Intellect Books, 2012.

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Chapter One

Soils and Interventions

Introduction

The problem that my research has identified is the quantifiable depletion and exhaustion of soils through human activity in agriculture and other industrial practices. The data in scientific texts going back to the 1970's, and now more urgent reports from the UN, NASA, and other peer reviewed sources show that agriculturally viable topsoil is being lost to human and human driven forces at a global average of ten tons per acre per year, a rate that could erode, or exhaust nearly half of the agriculturally viable topsoil on the planet by the end of this century. As of now there is no viable alternative to soil for the agriculture needed to sustain human populations at their current level and human societies in their current form. As soils degrade, exponentially in some regions, human populations continue to swell. Recent UN Climate Reports are unambiguous in their prescribed solutions (conversion from extractive mono-cropping to small scale sustainable farms); however, such a shift away from what has become the predominant form of food production in much of the world is encountering significant resistance and obstacles.

Joined with this recognition of a major issue for contemporary global societies are the concerns about the marked influence economics has assumed in relationship to attempted solutions. Enormous consequences for humans and life on the planet are

inexorably tied to international commerce and corporations that seek profit as a primary goal. In the course of researching this problem of degraded soils, I have looked closely at some of the primary causes, and a range of proposed and applied solutions in the field of ecology. Along with describing these solutions in theory and practice, the emphasis of this investigation has been on creative ways to address how shifts in societal knowledge and attitudes about soils may be facilitated. Because artists and artistic movements have often been at the forefront of social change, and because art practice makes up the larger part of the background knowledge that I bring to this investigation, its primary focus is on how artists have responded to ecological issues and included environmental activism in their practices. Therefore this thesis includes accounts of direct participation in collaborative art practices that strive to raise public awareness about problems in soil ecology.

The methodology that it has employed herein is transdisciplinary and has proceeded through reading established texts, interviewing expert practitioners (primary source data), building sculptural objects and documenting their movements, as well as direct practice in ecologically oriented projects (bio-restoration and remediation), artistic projects, activist events, and work in all facets of commercial organic agriculture. The written texts cited are by eminent thinkers in the fields of soil ecology and established critics and artists. Where statistics and other data are cited they have been crosschecked for accuracy and where disagreements or ambiguities about statistical data are significant it is mentioned in qualifying statements in the body of the dissertation. Citations and footnotes follow Modern Language Association (MLA) style. Spellings are American, as

allowed by the University of Plymouth Doctoral Thesis Instruction Guide.

The research has also included three ten day critical review sessions each year with peer researchers and supervisors in the Planetary Collegium, participation in concurrent and additional conferences in subjects related to my research and practice, and writing several articles for publication in peer-reviewed journals. The final product is this written, theoretical dissertation that documents the process of exploration and innovation in soil studies through text and photography. Integral to the research is practice-based work whose explorations and discoveries are documented herein.

The contribution to new knowledge that this dissertation produces is in combining a unique range of influences in a transdisciplinary manner, (specifically: soil science, ecological philosophy, art practice, activism, core shamanic practice, Situationist (avant-garde) practice, and sustainable commercial farming), and bringing them to bear specifically in the emerging subject of soil studies. More specifics about the nature of these different but not separate (blended) components are given in chapter two, *Methodologies*, and are explained and demonstrated throughout the dissertation.

The kind of knowledge that this produced is a transdisciplinary way of knowing about soils that is multimodal, at once tactile, intellectual, performative, liminal, and intuitive. It thinks soils with the understanding that transdisciplinary knowledge is more holistic and robust when the variety of intelligences that it brings together are not treated as products or foundations of separate disciplines practiced simultaneously, but when

they have significant mutual impact. In other words, when art and science are practiced in a transdisciplinary combination, art is done and thought differently as a result of the influence of science and vice versa to the extent that disciplinary boundaries begin to blur, or are even rendered indistinguishable. As a way of knowing, transdisciplinary practice becomes a *praxis* that blends theory and practice into a performative knowledge that seeks a rich engagement with the world in exploratory ways. In the research and practice that has gone into this dissertation I have discovered that it is specifically a transdisciplinary way of knowing and doing that will be required to respond to what the data on soil degradation is telling us. In other words, soil chemistry alone will not address cultural blockages to shifted agricultural practice, art practice (as conventionally understood) alone is unlikely to be a pioneering force in bio-remediation, and sustainably labeled agricultural practices have largely proven to slow but continue environmental degradation where their goal remains getting soils to work harder for us. My research and practice has looked to, and intersected with, other established artists who have already understood the value and need for transdisciplinary approaches to environmentalist art. The originality of the work that my collaborators and I have done is thus in *bringing to bear a unique combination of influences in work that is undertaken specifically on behalf of soils* rather than a radically new idea.

A major concern has been the question of the potential efficacy of the artistic approach to ecology. In addressing this question, it has been necessary to look back in time to find examples of established and previous art projects that have had demonstrable influences on society. The histories of art practices that have been successful in social

environments contain a number of examples ranging from Situationist art to public performances that also involve imagery and objects. The research and practice that has gone in to the development of this thesis has drawn inspiration from some of these established examples and has participated directly in some of them as well. In doing so, its primary focus has been on those that use public pranks as a tactic, however it will not be limited to them. At the same time the research and practice has endeavored to find potentially new avenues of pursuit by bringing in direct liminal (shamanic) practice, specifically *core shamanic practice* as developed by Michael Harner, in combination with interventionist performances. A concurrent step has been to draw from the work of a number of continental theorists, applied specifically to the context of soil ecology.

The thesis is divided into seven chapters, a list of images, and a bibliography that lists those texts and other sources quoted or cited in the dissertation body. The first, introductory chapter here summarizes the dissertation, describing the problem it identifies, its methodologies in brief, and points to a few of the particular examples from which it draws. The second chapter, *Methodologies* describes the modes and tactics of the research and practice that has gone into producing the dissertation. It also clarifies the particular disciplines brought to bear within the dissertation projects undertaken on behalf of soils and soil awareness. The *Methodologies* chapter also gives some of the background for the ideas and tactics brought to bear, and why they came to the fore in the course of the research and practice documented herein.

Chapter three, *Soils and Agriculture* will define what soils *are*, describing the

nature of soil studies in the scientific fields of pedology and edaphology based on a variety of interpretations. As detailed as these descriptions are, they do not reach to the microbiological level, which exceeds the scope of his dissertation. Instead, the narrative aims to elucidate the generative and regenerative characteristics, and particular vulnerabilities of soil. It will also describe some of the agricultural and industrial history that has led to soil's current conditions, introducing some of the major historical developments in agricultural practice (emphasizing those in Europe and America) that have resulted in soil's current plight.

The fourth chapter, *Soils and Ecology* will describe some of the history of what have been termed "ecology movements," and will describe some of their philosophical underpinnings. The development of these scientific disciplines and social movements include seminal publications, and, over time, the emergence of primary schools and modalities of ecological thinking, with particular attention paid in this dissertation to issues of soils. Also described in the chapter are prescribed best practices relating to soils as described by permaculture, bio-dynamics, bio-intensive farming, no till, and dry farming, etc. Ecology as a broad field has its main philosophical underpinnings in a corpus of critical writing by established thinkers from John Muir to Rachel Carson, and many others, but also a large pantheon of lesser known but hugely influential practitioners such as Bill Mollison and David Holmgren. Partly as a result of their work, there are widespread and significant movements in the direction of genuinely sustainable agricultural practice. However, philosophical, economic, and political blockages to shifted, better practice continue to produce results (on a global average) that fall well

short of what is needed to avert immanent catastrophe (humanitarian crises) related to soil exhaustion that has already happened historically, and is continuing to happen in both "developing" and industrial countries.

Chapter five, *Soils and Art Interventions* will describe how some artists have responded to ecological issues. It includes some important model projects that are selected for discussion and shows how these artists and individual projects can be shown to have had an impact with regard to raising public awareness of ecological issues. Included herein are works by emerging artists whose use of mass media and satirical stunts (performances) places them outside of the conventional relationship between fine artists and galleries. Examples such as the Yes Men and Reverend Billy who have been central to my research, are those of established performance artists on one hand, but the collaborative, activist nature of their projects, the new technology that they employ, the current context of their work, and the new urgency of their tactics gives their work a unique tenor, if not a potentially new meaning.

The sixth chapter, *Soils and Liminal Performativities* (transdisciplinary performances) will describe how our collaborative works have participated in established projects undertaken on behalf of (soil) ecology and then continued on to look for new openings of practice and interpretation, demonstrating in the process a unique, transdisciplinary approach to soil studies. The building of these individual art works, in particular sculptures, require a process of construction followed by staging of performances and displays. Beyond the creation and public viewing, it has been part of

the research to describe these projects in terms of their measurable, or at least identifiable, impact on society. Quantification of ecological art endeavors are often beyond measurements that are presently available. However, it can be noted when they have elicited public response and are shown to stir awareness and debate. The projects undertaken during this research were all collaborative in some ways. These explorative practices in art and performance were done as experiments and they serve as preparation for additional work and documentation in the future. The final concluding chapter will summarize what has preceded it, and describe continuing and emerging practices in soil ecology and activist art practice.

The study starts by describing the current condition of soils worldwide, with an emphasis on the US and Europe. European and American historical agricultural and current industrial practices related to soils are chosen because they constitute the origin of most current large-scale, industrial farming practices worldwide. This is evidenced by the effects of the green revolution in industrial and "developing" countries, and the fact the US biotech companies currently control up to 65% of the world's seed reserves.[1] Further, in engaging with issues of soil ecology, the bulk of the information that this research has uncovered strongly suggests the benefits of focusing on local issues, conditions, and activities. This can be seen by the fact that many local movements such as biodynamic farming, farm-to-table, slow food, and heirloom seed movements are currently at the forefront of efforts to preserve and sustain soils and ecosystems.[2] Thus, the focus of this

[1] http://www.gmwatch.org/gm-firms/10558-the-worlds-top-ten-seed-companies-who-owns-nature (Viewed 09/10/13).
[2] http://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf (Viewed 09/10/13).

dissertation on regional and local soils, specifically those of Northern California, is apropos the preponderance of information about best practices (i.e. prescriptions for shifts to local food sources) that the research has found.

An important part of the introductory material is a description of what practices have led up to the current condition of soils. It is through an inventory of historical agricultural milestones that we can understand many of the prevailing contemporary practices in soil usage. From this background material, it is possible to see the manner in which an innovative field of ecology came into existence as a response to changes in agricultural/industrial practice and their perceived consequences. The emerging state-of the-art in ecology has been the source of inspiration for practicing artists, including my collaborators and me, who have participated in the movement such as it is, and worked vigorously towards its intensification. Some of our projects have had both direct and indirect connections to influential environmental activists groups such as Greenpeace, the Rainforest Action Network, and Earth First!, and artists such as the Yes Men and others. There is an array of ongoing practices and planned projects that will continue beyond the timeframe and scope of this dissertation. These future efforts will continue to address questions about how soil remediation and sustainable agriculture will be accomplished, and will continue to seek new ways to exceed societal blockages against shifted thought and practice in the arena of human relationships to soils.

The issues being discussed here are worthy of attention. The depletion of irreplaceable topsoil, growing desertification, toxic applications affecting rivers and

oceans as well as soil, shrinking bio-diversity, and a host of other serious problems are challenging the entire world. Organic farmers, sustainable practitioners, artists, and environmentalists are addressing these issues through a wide range of practices that are both emerging, and based on established traditions in agriculture, ecology, and the interventionist practices that can help to alleviate agricultural burdens on soils and raise public awareness about them. However, the continuing environmental degradation widely reported around the world calls for renewed and expanded action. As artists have begun to join these efforts, largely in the last several decades, there has been a blurring of art and activism as "separate" disciplines or practices on behalf of soils and other ecological concerns. These intersections are of particular interest to the research and physical work that has gone into this dissertation, and will be described in greater detail following a close look at soil bodies and their historical and contemporary relationships to human agriculture and ecosystems.

While it is hard to say that the research has reached a *conclusion*, the final step in this writing has been to evaluate the current situation, the past efforts, on-going projects, methods of evaluation of effectiveness, and next steps towards expanded practice on behalf of soils and the ecological future of humans and our host body. The future developments of ecology, environmental art, and expanded transdisciplinary practices will be crucial in shaping the realities of life on the planet.

Next steps towards sustainable practice, localization, community building, and, as emphasized by my research, a rethinking towards a broadening and deepening of human

understanding of, and behavior towards, soils may appear to be a matter of common sense based on our best information at this time. However, their application has been, and will continue to be, confronted by significant resistance for the economic and political reasons (based on short-term profit motive) mentioned at the beginning of this chapter. The art practice that is the focus of my work and that of my collaborators does not have all the answers. However, art praxis and its physical and theoretical tactics have historically proven themselves to be facile at creating radical openings for shifted thinking on societal scales. As my research and practice has moved towards that paradigm it has found that transdisciplinary praxis offers uniquely systemically attuned, open ended, and therefor potentially effective ways to address ecological problems that seem to defy solutions based on current knowledge and practice. There is currently no "silver bullet" against the seemingly impossible problem of soil degradation as a result of human agricultural and industrial practices. The unique amalgam of practices that the work in this dissertation demonstrates is not presented as a stand-in for a singular solution to ecological crises, but rather as a merging of necessary first steps towards comprehensive environmental solutions in differing contexts. Their insistence on free exploration both stylistically and intellectually is base on the probability that there is no permanent solution to the difficulties that humans will encounter in attempting to sustain ourselves'. Hence there is probably a value in a certain amount of open ended methodology (tactics) that otherwise may appear without purpose as a bio-mimicry, if you will, of the false starts of evolution, but herein practiced with a very active intentionality as will be described and demonstrated in the following chapters.

Chapter Two

Soils and Interventions

Methodologies

The following chapter describes in detail the methodologies that have been employed in pursuing the theoretical and practice based components of the research for this dissertation. These methodologies are transdisciplinary and multimodal in all aspects of their employment. I have developed them over the course of many years through my thinking and practice, and over fourteen years of teaching in theories and practices of visual arts. As these methodologies have developed they have come to appear to be very complex due to their transdisciplinary breadth. This is not so much because of specific intricacies within particular disciplines, but because, considered and practiced simultaneously (as a body of ideas and practices), they encompass a broad range of subjects and modalities. While their inception proceeded my work at Plymouth, the research and writing for this dissertation produced and entirely new body of work and many innovations to my methods which were shared with, and further enriched by, other scholar-artists in our collaborations, and with other researchers during the Planetary Collegium Sessions.

The modes of thought and practice described here are demonstrated in the projects that have been undertaken for this dissertation which are described in the chapters on *Soils and Art Interventions*, and *Soils, Interventions & Liminal Performativities*, but for the sake of clarity I will describe their particulars in the following chapter. It includes descriptions of the particular ways that my collaborators and I have approached research and practice, their underlying motivations, and how they have developed during the course of my research at Plymouth. For this reason parts of the chapter read somewhat

autobiographically because it has been through personal experience, in addition to formal academic research, that the methodologies have developed.

In describing them here, I describe the *tactics* (maneuvers) of the projects as much as *methodologies* (fixed behaviors that anticipate predictable outcomes) in an effort to remain intellectually open ended, that is, *problem seeking* along with pursuing problem solving towards formal conclusions. This has been motivated in the earlier stages of the research by the necessity to allow its direction to develop according to explorations and findings in accordance with supervisory advice. Further, because a significant component of the research has been art practice based, there has been some productive benefit to allowing it to proceed as my art projects generally have in the past. That is, either partially or radically open-ended by intent, as will be described in detail in this chapter.

In chapter four on *Soils and Ecology* I do outline a wide variety of treatments and potential solutions (better practices) for the plight of soils, but despite the fact they are prescribed by peer reviewed data and have been shown to be effective in many cases, they are *treatments* rather than cure-alls. Deep-seated systemic problems such as soil exhaustion defy singular and perhaps permanent solutions, and as will be seen in subsequent discussions, it may be more practical to address ecological problems by creating openings for imaginative, radical thinking than to seek quick fixes where our understanding of ecosystems is limited.[3] As Deep Green Resistance has stated, "the time

[3] I use radical here as *systemic*, reaching for root interactions

for short-term solutions is past."[4] What is implied, if not demanded here is that long-term solutions require systemic shift on radical, underlying levels that call for radical, systemic openings of thought and actions. This proposal (wager) is reflected in all aspects of my thinking and work herein, and forms part of the kernel of what my research suggests that soils may have to teach western art and philosophy. Hence, for dissertation purposes, I refer to *methodologies* with regard to my own work with the caveat that they have been applied in a situational (case by case)-fashion to creative processes motivated by hard data and not the other way around. In other words they are experiments, motivated by verifiable information, whose efficacy can be confirmed in some instances, but their intent is also to generate unexpected opportunities (openings), while studiously seeking to avoid generating unintended problems.

The research for this dissertation has used established texts, online publications, a wide range of cross-checked news sources, documentaries, live interviews with experts in a variety of related fields, primary source data, critical advice from experts and supervising professors, critical feedback from public lectures and exhibits, back yard experiments, gardening, liminal practice (training with Michael Harner in Core Shamanic practice), art praxis, and transdisciplinary collaborations. Additionally, during part of the writing of the dissertation I was working a summer job on an established organic farm, which gave me first hand experience in all aspects of small-scale, commercial-organic agriculture. Concerted effort has been made to emphasize the use of peer-reviewed sources, and all data and statistics cited with regard to ecological conditions have been

[4] http://deepgreenresistance.org/en/ (Viewed 06/23/15).

carefully verified using multiple sources, both online and text-based. Due to the changeability of online sources, where cited I have included notation of the date on which they were viewed.

The textual basis of the research involved reading on soils, ecology, art practice, and philosophy by established, eminent thinkers in these fields. For the basic structure and taxonomies of soils I have referred to a wide variety of conventional scientific texts that describe soil bodies and soil behaviors. While these texts rely on chemistry and biology as their foundation, they also admit to various ambiguities of interpretation with regard to definitions of soils. Further, there is a great deal about soils that remain unknown, for example the fact that of the millions of active microbes to be found in even a teaspoon of moist soil, the majority have not been classified or named as discrete individuals. However, as mentioned in chapter three on *Soils and Agriculture* there are generally accepted definitions for how to describe soils in a conventional range of contexts (i.e. *soil* vs. *dirt*, etc.), and these are considered from an educated perspective throughout the dissertation.

Likewise with regard to general ecology I have relied on the work of pre-eminent thinkers, both historical and contemporary for their appraisal of the structures and dynamics of ecosystems, the role of soils within them, and the current state of affairs with regard to their contingencies. These texts include narrative and analytic descriptions of the formulations of scientific and social ecology as described in chapter four on *Soils and Ecology*. They also include historical accounts of the dynamics between human

populations and the state of soils, as well as describing scientific indicators of our current predicament.

The transdisciplinary nature of the research and projects mentioned I see as functioning most effectively when the different disciplines brought to bear do more than embellish each other, but go beyond situational partnering into significant mutual affect. This idea is also inspired by Roy Ascott's use of the term as indicating the *transitionionary*, that is, *evolutionary* rather than merely simultaneous, as in multi- or cross- disciplinary.[5] Most importantly, as I have found, a comprehensive address of soil studies undertaken on behalf of soil preservation demands a transdisciplinary approach because no one discipline can comprehensively understand soils as entities, much less address the need for changes in human behavior toward them: Well-intended efforts to develop a relationship with soils based on affinity alone does not address the biological details of myco-remediation. Soil chemistry alone cannot engage with the philosophical interventions called for by cultural aversions to "dirty" soils and the stigmatization of abject dirt. Soil theory (as in "area studies") alone needs not necessarily concern itself with practical details of productive fertility. Soil-oriented environmental art practice is free (and sometimes content) to treat dirt as merely a raw material. In ecological discussions about soils we easily forget astronomers and the fact that space is full of dirt, salt, and water, etc. In other words, a comprehensive effort to pursue art practice based on the comprehensive study of soils required by the complexity of their structure requires ecologically transdisciplinary thinking and efforts to push beyond mono-disciplinary environmental art and merely eco-embellished projects. This is already understood by

[5] Ascott, Roy. *Telematic Embrace*. London: University of California Press, 2003.

established artists, such as Betty Beaumont,[6] Georg Dietzler,[7] Bonnie Ora Sherk,[8] and others, who have done pioneering work in ecological art with transdisciplinary orientations. Our efforts are towards contributing to these conversations and processes on behalf of soils in evolutionary ways.

Examples of eco-embellished work as opposed to ecologically transdisciplinary would include painting on canvas with dirt where the medium has no significant impact on how the painting is done, or making images on the ground that merely treat soil as raw material. By contrast, in ecologically transdisciplinary art projects, art is approached from a different perspective than it might otherwise have been as a result of the imbedded intent to study an ecosystem in the process of generating artwork. One prominent example in chapter five was that given of Jerilea Zempel's work where she changed her way of working as a result of engaging with soil (manure), attempted to do something ecologically restorative, and learned something about ecology in the process. Further, ecology would be approached from somewhat shifted tactics or methodologies as a result of the intent to generate artwork, at least ideally.

My individual and collaborative work has followed this line of reasoning for many years, initially on an intuitive level, and then more recently out of a conscious dissatisfaction with disciplinary boundaries. Throughout the projects that make up the research for this dissertation there has been a concerted effort made to practice art in an

[6] http://beaumontstudio.com/ (Viewed 06/03/15).
[7] http://www.dietzlerge.org/ (Viewed 06/03/15).
[8] http://curatorsintl.org/posts/cultivating-the-human-ecological-garden-a-conversation-with-bonnie-ora-sherk. (Viewed 06/03/15).

ecological way, and to approach science in a playful, open-ended fashion. This made the Planetary Collegium at Plymouth an ideal venue for pursuing soil studies as a transdisciplinary project. Despite having to operate in the broader context of formal academia, one of the stated missions of the Collegium is to to help blur and complicate the boundaries between art and science.

However, due to the way that language and Western habits of thought have co-evolved with strongly demarcated disciplines (especially since the 18th Century, as discussed in chapters three and four), the merging of art and science is not an easy project to articulate. Further, it is not a singular, monolithic project. In our discussions on transdisciplinary work, Ascott has not referred to 'art *as* science,' which implies a substitution of one distinct practice for another, nor to 'art *in* science,' which would again reify their separation. In considering a more radical (foundational) degree of melding, one quickly runs up against a dearth of terminology for describing the potential results. Hence, Ascott's development of terms such as *technoetics* and *moist-media* to describe, in part, the blurring of lines between techne (technology and artifice) and poiesis (also a form of making that acknowledges intuition and feeling), an effort shared by my work as well.

Similarly, my doctoral project is not only about "merging" art and science, but also liminal (spiritual) practice, political activism, both historical and re-emerging Situationist practice, and conservation. In the dissertation I address them separately out of the necessity to avoid confusion on the part of readers, and in practice they are treated

individually at times where clarity requires. However, the sense of the transdisciplinary that I wish to articulate here is that though history and conventions of language may necessitate treating these practices as distinct, the ideal that our projects have pursued is that these different but not separate practices become, at times, indistinguishable.

Background for the art practice

(Student Collaborations)

It is important to reiterate that all of the work presented in this dissertation has been undertaken during the research period after enrolling at Plymouth. However, for general clarity of some of the methods and tactics that have been brought to bear, it may be helpful to describe some of the prior work that lead up to the group of projects described herein. Between 2002 and 2007 I was pursuing a Master's Degree in art practice and philosophy and Sonoma State University while teaching full time in visual arts at Healdsburg High School. My schedule at the high school consisted entirely of drawing classes, although they brought in some three-dimensional components as well. A few years prior to that I had lived in Japan and had been very inspired by the folk art and traditional craftsman's tools I had seen. It had been on my mind to begin working sculpturally, partly based on what I had seen there, although at the outset of my MA studies I did not have a set plan as to the physical media that would accompany my research.

Initially in the MA I set out to look at the history of Western aesthetics and expected to conclude somewhere in the arena of a "post-structural" critique thereof. Behind this was the desire to contribute in a productively disruptive ("revolutionary") way to the expansion of the parameters of Western academic philosophy with which I had become frustrated as an undergraduate. I began with graduate level art history courses and independent studies looking at canonical writings on aesthetics such as those of Kant. Shortly thereafter however, I took a course on *philosophy of travel* with Dr. Roger Bell and became fascinated with concepts of "place," and the idea of potentially site-specific subjects (I subsequently published a review of Alfonso Lingis's *Trust*[9] in *Politics and Culture* after being introduced to his work in the course).[10] As I began to be more and more interested in land and the politics of its use I also began to bring these discussions into my classes at the high school. During the same period of time I started getting to know a group of young men and women in my classes who impressed me as being uniquely politically aware, and our conversations began turning towards issues in Mexico where many of them had been born.

Mostly they were not traditionally high performing students academically, but I found them to be very intelligent and very politically aware in ways that I had seldom encountered with students of that age. Some of the information I was getting from them was literally coming off of their t-shirts, which had images of different revolutionary icons each day. I was familiar with some of them, but others such as Maria Sabina, the

[9] Lingis, Alfonso. *Trust*. Minneapolis: University of Minnesota Press, 2004.
[10] Lancaster, Linus. *Location-Translation-Movement. Politics and Culture*. Issue 3, 2005. http://politicsandculture.org/2010/08/17/location-translation-movement-alphonso-lingis-2/ (Viewed 06/10/15).

EZLN, and Sub-commandante Marcos were new to me. As I began looking more closely at the issues surrounding the work of these individuals I began inviting the students to bring more of them into their course-work. Very soon our conversations moved towards the idea of creating independent course-work for them based specifically on the politics of the US/Mexico border, and of working directly with the Zapatistas. From that point forward my MA studies were almost entirely given over to the politics of land-use and colonial histories, with particular emphasis on indigenous issues in North and Central America. The philosophical content shifted from aesthetics to analyses of time, economics, territory, violence, and transcultural interrelations. The work also became increasingly collaborative.

One of the principles of *Zapatismo* (based on a rethinking of politics "from below and to the left") that made a particular impression on me was the idea of *listening*. Politically, it is not about a consensus process necessarily, but calls for taking time to hear whoever and however many people want to speak, along with actually trying to consider their views. I also noticed that as I attempted to practice this in my classes, and especially with my group of collaborators, that I was having the impression of temporal suspensions, almost akin to a meditative 'loss of self.' The student's experiences were very different from mine, some very difficult, and I found that listening openly and as completely as I could to their stories and ideas was very different from the kind of listening I usually did in my role as a teacher. As our work progressed I began to give more direction and creative decisions over to them. It was also the first time in my teaching experience that I began to really understand what it meant to give over the

teacher's role as a way of empowering someone else. My approach to the transdisciplinary character of the more recent work for this dissertation, and my approach to soil studies as a whole, would like to continue to reflect that ethic. At the height of our work there were twelve students who were directly involved with the projects. Along with some who came and went, there was a core group of about five with whom I continued to work after they left the high school. Two of them, Cruz Calderon and Jose Montes, participated at my MA thesis defense as peers.

Physical Projects

The projects that we undertook during this time ranged from drawings and paintings, to letter writing, fund-raising, field trips, photography, and guerilla installations. We also began building sculptures that were designed to travel with us, or if necessary by mail, in order to address regional political issues in site-specific ways. The ideas for most of the sculptures were mine conceptually, but with a good deal of input from the collaborating students, especially with regard to the issues that they were built to address. Students were also working on projects based on their concepts in which I would help as asked. Because the sculptures were designed to travel by mail they had to be small or easy to assemble and disassemble. Because they had to put up with rough treatment they were sometimes rough in appearance, and could not be very expensive because they were subject to being lost or damaged in the mail. We began referring to them as "tierra-boyas" (land-buoys) as a result of their being markers that designated places and related issues, but also that their portability played with the subtle fluidities of

site-specificity. An example of one such piece was a steel-framed chupacabra (mythical creature akin to a vampiric "coyote") that was installed at the Library of Congress in Washington DC, then sent to Chiapas to attend an intensive Spanish emersion class with the Mexican Solidarity Network. After numerous other travels it was sent to Tenochtitlan with Abraham Rico, one of my collaborators, to be sacrificed at the top of the pyramid. As it happened, the security guards wouldn't let it through the gate, so it was brought home and repurposed as a proxy-animal/marine radio for more recent projects.

In another more performative project we went to Sacramento and painted the steps of the California State Capital Building with mud made from dirt that we brought back from Mexico. Following this we went in to interview various legislators to encourage them to lobby for the repeal of the North American Free Trade Agreement (NAFTA). As expected, when they replied that their offices were not the appropriate place for debate on the subject, we begged to differ, stating that they had Mexican soil on the bottom of their shoes and that it had become a 'borderless' human-rights issue in which we were all stakeholders.

We considered that the public nature of our projects made them educational. When we traveled with our EZLN banner and sculptures it raised curiosity and prompted conversations with people who had never heard of the Erjito Zapatista Liberation Nationale and were unaware of the low-intensity civil war in Chiapas. The character of the sculptures was confusing to people because I designed them based on inspiration from Asian folk art and with the intention to be representative of liminal (underlying)

rather than literal ideas. Their whimsical appearance also made them approachable, and our public conversations with curious bystanders and tourists became a central focus of our work.

The role of humor was very important to us as we pursued this work. We considered it an antidote to violence and despair in the face of seemingly overwhelming odds. Also, when we began our collaborations the second Gulf War was starting, and as a combat veteran of the Iran-Iraq War, I was horrified by the Invasions of Afghanistan and Iraq and was becoming politically radicalized as a result. The constant infusion of humor into the work was a way to deal with the grief of seeing the consequences of American foreign policy and, I hoped, a way to sustain a life of activism without giving up or being consumed by anger. We were also inspired by some of the writings of Subcomandante Marcos, which were politically incisive but also full of whimsy and satire. As he was becoming the spokesperson for the EZLN he declared himself to be the Don Quixote of the Selva Laconda, and stated that sometimes humor is one of the best weapons against "the grotesque clowns of the ruling class and the imbecility of capitalism."[11]

The use of humor and absurdism was also inspired by Dada and Situationism's critique of various rationales underlying many Western cultural ideas and philosophical conventions. Dada originated partly as a response to the horrors of mechanized war during WW1, and the notion that against such insanity and barbarism the only "rational"

[11] Marcos, Subcomandante. *Our Word Is Our Weapon.* New York: Seven Stories Press, 2001.

response was one of 'irrationality.' We have applied that thinking to the seemingly insane practices of imperialism, capitalist exploitation, and environmental self-destruction. Further, our projects seek to satirize and critique the deeper underlying philosophical 'logic' by which those practices and habits are justified. While sober, formal analyses of these patterns of practice are important in academic arenas, there is also a demonstrable value in writing and art practices (especially in the public sphere) that engage with, and lampoon various traditions in explosive ways that ignore the etiquette of convention. As is shown in chapter five on *Soils and Art Interventions*, this has been a prominent aspect of established, and emerging eco-art practice since the 1960's, and my collaborators and I have publically contributed in a variety of ways.

Initially we thought that using humor would help to make an impression on the people with whom we came in contact. When we went into the California State Capital building to interview politicians, we expected that the absurdist nature of our art-stunts would make us easier to dismiss but harder to forget. In other words, it was seen as a trade off. We might be seen as clownish by some, but more visible, whether effectively or not. We were also diffusing our own anger and finding ways to resisting using aggressive sabotage as a tactic. It is worth noting here that some of our activities have crossed legal boundaries but have consciously avoided causing injury or property destruction. In *Soils and Art Interventions* I describe various forms of eco-sabotage and its potential efficacy and limitations. Some groups with whom I am affiliated have engaged in sabotage, but for reasons of self-preservation I have avoided it. As with the Yes Men (described in *Soils and Art Interventions*) and their corporate "identity

correction" stunts, most of my collaborators and I would rather embarrass those we target rather than falling into the seduction of physical "monkey-wrenching." As a teacher, I am also responsible for showing my students how to channel anger and righteous impatience in productive ways that avoid self-destructive behavior.

The role of humor has become increasingly important as I have begun to work with soils. Etymologically "humor" means moisture or fluid and shares some of that meaning with soil, as in forest *humus* (the wet O Horizon of bio-fall on a forest floor). Just as humor has been an effective way to remain immersed in political activism without being consumed, it has also been an effective "tool" for facilitating direct engagement with soils. This is not to suggest that humor is a means to an end, but that it has an efficacy sufficient to make it sensible to *insist* on its inclusion, even when dealing with critically serious subjects. This has been applicable to the engagement with soils on every level including addressing the politics of its treatment, the dire nature of its imperilment, and the difficulty of overcoming cultural aversions to proximity with soils, given their negative associations in Western traditions. Further, there is the difficulty of engaging with soils, on philosophical, physical, and emotional levels, which is that most Westerners have little or no idea how to begin. Soil's value as a tool for agriculture is virtually omnipotent, but beyond that it has been disregarded by Western, Christian-industrial societies to such a degree that those of us working within them have tended to grow up viewing it as an alien other. The humorous, artistic impulse to simply jump in and "get wet" without clearly preconceived notions then becomes an effective way to begin.

Perhaps most importantly I discovered during the writing of this dissertation that humor is one of the unifiers of the broad range of transdisciplinary methodologies that my collaborators and I have brought to bear in our research and practice. In other words, though not always explicit in the work, humor forms the body of these blended modes of thought and practice. Humor is the wetness that sticks the scientific study, art practice, liminal practice, philosophy, horticultural practice, and political activism that comprise soil studies together.

In chapters three and four I have quoted thinkers such as William Bryant Logan and Vandana Shiva as stating that if we are to alter our behaviors and reduce our damaging exploitation of soils, we must begin to develop a different relationship with them. This relationship would need to involve greater care, greater empathy, and greater intimacy. Yet, in my extensive research I have encountered few articulations of what "intimacy with soils" would mean, and how contemporary Westerners and other culturally industrial societies would begin the effort to cultivate it. Part of the contribution of this dissertation is that in doing the research for it, I had to "jump in" and learn to do this first hand. The effective, transdisciplinary method that I discovered was in gathering a unique amalgam of praxis, including shamanic training and contemplation, scientific study, gardening, farming, art production, political engagement, philosophical analyses, and Situationist style pranksterism (interventions), all practiced simultaneously, specifically on behalf of soils. The tactics that I employed might not give the same results for everyone, and certainly would not suit everyone's sensibilities, but they point

to one effective approach, and as I have discovered, humor has been at the center. As is explained in chapter three on *Soils and Agriculture*, "soil" without the *wet* is "just dirt."

Before proceeding it may be useful to address these components individually, despite the fact that I consider them to be more akin to *modalities* of what has become a notably 'unified' endeavor. In doing so I will not attempt to define them, as terms like "philosophy" defy concise, singular definitions that would satisfy a broad range of sensibilities. Rather, for the sake of clarity I will briefly describe their role in the generation of work herein:

Art Practice (Praxis)

"Art practice" is here understood as theorizing, conceiving, designing, building and interacting with objects (mostly sculptural), as well as ephemeral performances that we have documented with film, but which may leave no lasting mark, or result in any artifact. Our work has included activities that were not observed by other people and were not documented at all. We consider these to be a form of offering towards a specific place, a specific intensity, a non-specific creative opening, or in some cases with no conscious intent whatsoever. My "environmental artwork" and liminal practice began simultaneously, somewhat by accident while working alone in remote locations where some projects were documented, and others consciously avoided documentation. Hence the inclusion of "*praxis*" to denote working thought processes, considered to be art

production that is as invested in thinking as in making, or in some cases that are woven into a lifestyle that need not always generate objects to find its expression.

As mentioned earlier, given the critical nature of soil's peril, and ours with it, it is sensible to look for unexpected openings of thought and behavior while still pursuing conservation efforts that seem cautiously practical. To borrow a statement from Lewis Lancaster,[12] "The enormity and complexity of these ecological challenges calls for a rethinking of *everything*." Given this, it is inevitable that some experimental practices will transgress the boundaries of what is considered conventionally "rational" behavior that demands immediate, predictable, measurable efficacy.[13] The undocumented work is not radically new, but has the merit of probably remaining ever in the margins of establishment due to its refusal of marketability. As an underlying motivator it has been of great value in driving all of our projects forward in one way or another, and has helped to keep the Situationist character of the projects consistently central.

One burning question among readers and audience members along the way is with regard to creative process: which comes first, the object/performance or the theory? Most of my collaborators and I consider this question to arise from a modernist sensibility that wishes to fix creative process into a reproducible, predictable methodology which is potentially distracting and or counterproductive. There are times when a compelling image seems to arise and we look for a philosophical project to marry

[12] https://en.wikipedia.org/wiki/Lewis_Lancaster (Viewed 06/22/15).
[13] In response to cautionary advice we have married some of our projects to groups such as the Yes Men and Greenpeace whose results can more easily be quantified, however, our interest in them, and their prominence in the dissertation is based on their conceptual merits and on affinity as much as on their ability to impact the bottom line of corporations.

it to, but this was more the case with earlier work using drawing and painting, and has been less true of projects for this dissertation. More often of late, we begin with a philosophical trajectory and brainstorm performances based thereon. The sculptural objects then form around it, either conceived by me, designed based on collaborator's suggestions, or are mutually conceived out of conversations.

The creature-like appearance of most of the sculptures is based on my individual notion that the impulse to anthropomorphize things around us is partly based on feelings of absence as a result of the Western-industrial manufacturing of disconnect from non-human entities. In keeping with previous statements about the use of humor, the cartoony appearance of some of the sculptures is intentionally satirical of the philosophical or societal conventions they address.

The art objects that have been generated during the research and writing of this dissertation have tended to fall into two "categories:" illustrative and *working*. Illustrative works are representative of an idea, or are experiments of function with less emphasis on their appearance. They have generally been less successful at holding my interest, or generating it in others, and few were included in the dissertation. The *Dirt Gallery* and the *Meatline (Underground History)* described in chapters three and six have been exceptions. The *Dirt Gallery* was filled in shortly after being dug, but I am still exhibiting images from it, and am still exhibiting and adding information to the *Meatline*. Experiments such as the *Olla Irrigation Jars* shown in chapter four on *Soils and Ecology* were illustrative of an ecological concept and made without as much visual thinking as

they would have been if they were going to travel and take on a life of their own as interactive sculptures. The illustrative works always have the potential to become *working* pieces if an opportunity arises, but on the whole they have been one-use objects to experiment with a function or state a singular point for a particular exhibit. If a working opportunity (travel or public interaction) arises, they would usually be rebuilt in a more sculptural (visually intentional, hopefully striking) fashion, made sturdier, and more easily portable.

Working objects are those that travel independently and develop over time. They usually begin with the intent of being working objects (interactive, traveling pieces) that develop their own history through independent interaction with different places. As described in chapter six on *Soils, Interventions, and Liminal Performativities,* they gather dust and microscopic physical material from locations where they travel and thus comment on, or play with, the portability of otherwise site- specific behaviors. The dirt that they carry is from particular places with particular characteristics, specific geologic parent material, etc. Removed from that environment the dirt ceases to be "soil" for technical reasons that will be explained in detail in *Soils and Agriculture*, but it still maintains some characteristic behaviors such as absorbency or ability to cling to surfaces. My interest in these issues precedes the research for this dissertation, however the individual pieces mentioned were done during my enrolment at Plymouth. It was not until I began engaging with soil studies directly that I began finding some of the answers to questions about portability, site-specificity, and even "spirit of place" in the form of dirt and its morphology. This was another surprising discovery during the research for

the dissertation - that soil *is* "spirit of place." It generates nearly every aspect of that environment, including influencing the weather and its behavior effects nearly everything around it. It is portable, but then changes over time once removed from its climate and parent material (rock), as discussed in *Soils and Agriculture*. Notable exceptions not withstanding, this was a surprising answer to a nagging question along the way.

Among the working pieces there is at least one consistent process both in collaborative and individual pieces: If an idea occurs to me I put it in my sketchbook, whether or not I am confident that it is good. I wait a while and go back to it. If it makes me laugh I will build it when time and money allow. If it doesn't I will not.

Shamanic Practice

I was introduced to shamanic practice by Lois Lancaster who is my mother and Five Looking West collaborator. She began doing extensive training with Michael Harner,[14] Angeles Arrien,[15] and a number of other teachers in the 1980's, which led to her beginning a professional practice of shamanic healing work with clients. My own involvement with shamanic practice has been far less extensive although I have attended several of Michael Harner's workshops, and pursued guided work with a number of other teachers. It was begun in order to seek some insights about how to cultivate a greater intimacy (closer relationship) with soils, and perhaps some understanding of indigenous

[14] https://en.wikipedia.org/wiki/Michael_Harner (Viewed 06/22/15).
[15] http://www.spiritualityandpractice.com/explorations/teachers/view/143/angeles-arrien (Viewed 06/24/15).
http://www.ciis.edu/Academics/Graduate_Programs/Anthropology_and_Social_Change/The_Angeles_Arrien_Scholarship_Fund.html (Viewed 06/24/15).

cultural sensibilities about the relationships between humans and soils. During the research for this dissertation I also received generous consultation and advice from Marti Spiegelman, an accomplished professional practitioner.[16]

Most of my research and practice in shamanic work is informed by Michael Harner's methodologies, although I have received valuable training from others with differing approaches. Harner founded the Foundation for Shamanic Studies in 1979, which has continued and grown as a respected training organization that gives workshops throughout the world.[17] Harner's approach is termed *core shamanism*, which combines indigenous shamanic practice from Siberia with practices from the Ecuadorean Amazowhere Harner trained extensively. While core shamanism acknowledges the value of differing practices, its measure is that if a particular practice is found in multiple cultures around the world then it can be included in core shamanic (pan-shamanic) practice.

To state it briefly, core shamanism centers around *journeying*, meditation that induces a trance state, usually accompanied by drumming. As detailed in Harner's *The Way of the Shaman*,[18] the means of entering this state, which Harner refers to as entering

[16] http://www.martispiegelman.org/marti.html (Viewed 06/24/15).

[17] Started in 1979 as the Center for Shamanic Studies, the Foundation for Shamanic Studies presents the world's foremost training programs in shamanism and shamanic healing. They are based on the pioneering work of anthropologist Michael Harner, who brought shamanism to contemporary life in the West after extensive field and cross-cultural investigation, experimentation, and personal practice. He originated, researched, and developed core shamanism, a system designed for Westerners to apply shamanism and shamanic healing successfully to their daily lives. This system is based upon the underlying universal, near-universal, and common features of shamanism—together with journeys to other worlds—rather than upon culture-specific variations and elaborations. (Viewed 06/24/15).

[18] Harner, Michael. *The Way of the Shaman*. New York: HarperCollins 1980.

into realms of "non-ordinary reality," are varied and may included relaxation, breathing exercises, or simply listening to rhythmic drumming. Once in a relaxed (trance) state, one visualizes journeying (traveling) to non-ordinary (upper or lower) realms and seeking contact with entities there (people, animals, or others) who may be connected with as guides upon whom one can call for advice or support. Generally one journeys with a specific question in mind (a form of divination), seeking an answer from entities encountered along the way. If in doubt about an entity or answer received, the measure is based on repetition, i.e. that if an answer is right it will appear again. Answers may appear in any number of ways and may be highly metaphorical, making their meaning non-obvious at first glance. Journeying can be done in very short meditation sessions. Listening to drumming is helpful but it can be done under any circumstances. In my practice (which has at times been frequent and regular), I usually meditated after waking up late at night in sessions of ten to twenty minutes at a time.

There is much more to core shamanic practice, especially if one is training to use it as a healing method. I have pursued it as a means of facilitating a greater understanding of human relationships with the "natural world," that is, non-human entities including those such as soils, rocks, and trees that are broadly considered to be inanimate by western cultures. Because shamanic practice develops knowledge that is dependent on personal experience, many of its insights and claims fall outside the arena of formal academic viability, except as an anthropological or ethnographic study. Following advice by Harner and others I mention it summarily and for the sake of clarity here, whereas a more extensive narrative of my experiences might cause confusion on the part of some readers.

Harner insists that shamanic experiences are empirical because they are based on a formulaic discipline, observation, and are repeatable, albeit with some variation from person to person, and are anecdotally verifiable with a great deal of consistency. For the purposes of my research it has been a concurrent, rich personal practice that has facilitated the creative processes of the work described herein. The more extensive experiences continue to inform my theoretical considerations, art practice, and activism as they move beyond the scope of a doctoral dissertation.

Situationist Practice

Situationist practice is another of the influences (modalities, or set of tactics) mentioned in the transdisciplinary range of praxis brought to bear on behalf of soils in the research and practice for this dissertation. Situationist practice is most closely associated with Guy Debord, who is also the first person that I have found to directly connect Situationism (or the larger surrealist "tradition") with ecology in his publication of *A Sick Planet* (originally as a pamphlet in 1971).[19] As an historical movement, Situationism is enmeshed in, and seeks to synthesize earlier avant-garde movements such as Surrealism, which in turn arose from Dada and the avant-garde of the late 19th century. Examples of "Proto-Dada" art include Alfred Jarry's 1896 play Ubu Roi (see *Listening to the Merced River* in chapter six).[20] Though a simplification of the relationships between these movements, this is descriptive of their sequence. Differences in their emphases, styles, and tenor are not constitutive of distinct separations but rather arise out of the historical

[19] Debord, Guy. *A Sick Planet.* Seagull Books. Oxford, UK. 2004.
[20] Jarry, Alfred. *Ubu Roi*. http://www.todayinliterature.com/stories.asp?Event_Date=12/10/1896 (Viewed 06/22/15).

contexts in which they emerged, and the sensibilities of individuals who were considered to be at their center during particular eras. Though extremely loose knit and fractious one can speak of them as movements based on their self-identification, broad participation, and publications such as *The Dada Manifesto* (Ball, 1916),[21] *The Dada Manifesto 2* (Tzara, 1918),[22] *The Surrealist Manifestos 1 and 2* (Breton, 1924, and 1929),[23] and *The Situationist Manifesto (Report on the Construction of Situations)* (Debord, 1957).[24]

> Dada is a new tendency in art. One can tell this from the fact that until now nobody knew anything about it, and tomorrow everyone in Zurich will be talking about it. Dada comes from the dictionary. It is terribly simple. In French it means "hobby horse". In German it means "good-bye", "Get off my back", "Be seeing you sometime". In Romanian: "Yes, indeed, you are right, that's it. But of course, yes, definitely, right". And so forth. (Hugo Ball 1916).

Parsing out differences among the movements that proceeded Situationism (or concurrent movements such as the Lettrists or Fluxus) exceeds the scope of this dissertation. The interest of my research has been in the continuous thread of similarities among them as broad movements wherein the art world has responded to problems of Modernism. Of particular interest are those responses that may be applicable to ecology even if the relationship is not obvious on the surface.

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[21] Ball, Hugo. *The Dada Manifesto*. http://pers-www.wlv.ac.uk/~fa1871/surrext.html (Viewed 06/22/15).
[22] Tzara, Tristan. *The Dada Manifesto* (1918). http://www.391.org/manifestos/1918-dada-manifesto-tristan-tzara.html#.VZxx6u1Viko (Viewed 06/22/15).
[23] Breton, Andre. *The Surrealist Manifesto & The Surrealist Manifesto 2 http://ir.nmu.org.ua/bitstream/handle/123456789/21862/1282e41ff8593e92c75ab5c0f82848ad.pdf?sequence=1* (Viewed 06/22/15).
[24] Debord, Guy. *Report on the Construction of Situations*. http://www.cddc.vt.edu/sionline/si/report.html (Viewed 06/23/15).

Broadly, Dada, Surrealism, and Situationism are movements in art (to this I would add philosophy) that respond to, and seek to conceptually exceed the horrors of mechanized warfare and the colonialism that gives rise to it, the blight of industrialism and the alienation of capitalist production on which it relies, the philosophical codes of logic that justify them, and the complicity and complacency of the bourgeois classes. The avant-grade has generally sought to address these ongoing modernist issues not in isolation but as systemic, hence the emphasis on attacking their underlying rationalizations, including the concept of "rationality" itself. Thus, the character of avant-garde movements at large tends to be intentionally absurdist or apparently irrational. They frequently are, or appear abstract, in that by addressing underpinnings, rather than surfaces only, their correspondence to topical representationalism is not always obvious. As critiques of aspects of the societies in which they emerge, the works tend to be rebellious and impatient with conservative forces that resist change. As systemic critiques there is an ingrained philosophical or psychological aspect reflective of the questioning of ideas rather than behaviors alone (also a reflection of surrealism's co-emergence with psychoanalysis in the early twentieth century).

Historical accounts of avant-garde movements tend to give closing dates for them (such as the "disbanding of Situationism in 1972"), often corresponding to the termination of a central publication. However, many of their practices have continued in the art world, though often with less media attention. The conditions to which they have responded may have morphed but not disappeared. Acts of genocide and the atrocities of mechanized (an now robotic) war are ever present, global capital continues to consolidate

wealth upwardly, and the mills of Europe and America have shifted to sweatshops in China and Bangladesh. The prevalence of philosophical justifications for cruel labor practices and the complicity of the bourgeoisie and upper classes (currently referred to as the 1% and their status-quo supporters) in driving them may be a matter of opinion. However, the practice of offshoring by corporations to avoid greater social and environmental responsibility and patronage of their goods by the broader population in industrialized countries is quantifiable and may serve as an effective barometer.

The interest of my research particularly in Situationist practice (though not at all to the exclusion of others) is, as mentioned, the beginning of its relationship to ecology. This relationship has yet to emerge by any particular name, though it is hinted at in the pranks of some established (activist) environmentalist artists. As will be seen in chapter five on *Soils and Art Interventions* these environmentalist interventions tend to be topically goal-oriented rather than enacted to create openings for more radical philosophical ideas below the surface. In other words, my research has found within them practice-based references to avant-garde work, but critiques of the philosophical underpinnings of ecological issues tend to proceed along more literal lines. In environmental art that is less politically charged there may be more subtlety, at least in this sense, although my research has focused more on activism based on what environmental data is calling for.

The "end" of Situationism corresponded roughly to the emergence of environmentalism in the late 1960's and early 1970's and the emergence of post-

modernism. While aspects of post-modernism have embraced some of the tactics of Surrealism, I have found that there is an opening, or a call for an opening, for renewing the intensity of previous avant-garde movements such as Situationism through transdisciplinary modalities specifically on behalf of soil ecology. Here again is part of the contribution of the work that has gone into this dissertation as my collaborators and I seek new problems and new ways to create openings for rethinking human relationships to soils.

Dissertation Collaborations

As mentioned in the thesis abstract and in chapter one of this dissertation there has been a significant effort made to ensure that as many of the physical projects as possible have been collaborative in nature. In part, this arises from my experiences working with a group of exceptional students during my MA studies. As our work and relationships developed, the collaborative dimensions of our projects took on an ethical character in that they were mutually conceived, student-centered, and geared towards mutual impact among participants as well as being intended to have some impact upon society.

The emphasis on mutual affectation as a part of collaboration is also a character of transdisciplinary work, and the two have developed concurrently both in my previous work and with that undertaken for this dissertation. Transdisciplinary work lends itself to collaboration, and may require it for projects involving multiple skill-sets in which one is

not already proficient. Collaborative work undertaken in the transdisciplinary spirit further opens new possibilities by bringing in unexpected ideas that may address more than just a singular goal at hand.

As with thinking about creative processes, my collaborators and I have sought to rethink traditional notions of creative causality and thus of formal authorship. When I work with my students I make a concerted effort to "get out of the way" and let them steer the projects as much as possible. In doing so I am frequently pulled away from my own comfort zone and often learn a great deal in doing so. In working with professional peers the process is somewhat different in practice but not dissimilar. With more experience and expertise come more strategizing and productive discussions but also a tendency to get caught up in the moment. Long meandering conversations also lead to unexpected, organic arrivals and openings however. With peers, time is usually short and precious. I spend much more time with students but have to interact with them along with large numbers of other students who are not participating in my "side projects," so there are always distractions, and class times are set to limited durations each day.

Many of the projects discussed herein were done with Frederick Young, a professor of English at UC Merced, and a long time friend with whom I have worked off and on for decades. As I entered into the research and art production for the dissertation these collaborations became more frequent, vital and intentional, and he has co-authored several peer reviewed journal articles with me as well. Among the intentions of our work is to maintain blurred authorship of the projects, as would be somewhat the case whether

we wanted it or not. I make some mention of the differing influences that he and I have brought to bear in discussing individual projects in *Soils, Interventions and Liminal Performativities*, but for the purposes of general clarity I will outline them here more concisely. Frederick's dissertation was on animalities (the role of animals) in western philosophical traditions. The work that we have done with animals has directly arisen from his research here. I have contributed in a variety of ways, especially with regard to setting up the animality paintings, and I put together the *Field Concert* at Bucher Dairy independently. Frederick has brought the bulk of the continental theory that has informed and inspired our projects, though in our writing we lose track of who said what. I brought the micro and macro fauna of soils to the animalities discussions and coined the term "soilogics" in one of our publications. Horses and zeppelins were Frederick's ideas in *Listening to Animalities, Soils, and Shipwrecks*. I probably conceived of trying to make physical contact with the zeppelin USS Macon on the ocean floor, but it was another organic idea out of numerous conversations. Frederick came up with the idea of taking the project to the mountains when the ocean rebuffed us, and I came up with working with the Merced River based on reversing the elevations from Point Sur to Yosemite. I conceived and planned the phase of *Listening to the Merced River* in Concord, but Frederick introduced me to the band Negativland, and the suburban critique that inspired that particular piece. In other words with regard to our collaborations there is little sense in trying to parse out who the ideas came from. What better describes our work is the Yes Men's Jacques Servin saying at a recent lecture in San Francisco, "when you start getting cold feet over doing something that seems too risky or strange what you need is a friend to egg you on."

The methodologies for the Five Looking West Collaborations discussed in *Soils, Interventions, and Liminal Performativities* have been somewhat different due to the particular group dynamics and differing styles of the artists. The group is made up of five artists Chris Sarley, Mary Pettis-Sarley, Marilyn Hulburt, Lois Lancaster, myself, and Lewis Lancaster as an advisor. In this series of projects what ties our work together is the inspiration and influence of Korean culture and folk-art. In particular it is the emphasis of much of Korea's traditional art on the use of natural, local materials that are celebrated in the work by allowing it to remain rough, showing off the beauty of the materials in a semi-original state. Similarly each of us had done various bodies of work that celebrated local, Northern California materials and so working together based on the Korean influence was a good "formula" for generating collaborative work and exhibits. As expected, these projects fit perfectly with my immersion in soils, and because the collaboration was proposed towards the beginning of my work at Plymouth I brought it into my research and practice for the dissertation.

While particulars of the projects are discussed in detail in *Soils, Interventions, and Liminal Performativities,* I will introduce our methodologies here for the sake of clarity and describe how the group methodologies fit with those I was already developing in other projects. Marilyn Hulburt is a photographer, Chris Sarley and Mary Pettis-Sarley are ceramicists (Mary also does some textiles and photography), Lois Lancaster does painted scrolls and artist books, Lewis Lancaster is scholar of Buddhism and Eastern Languages, and my work is sculptural and performative based on soil studies. Because of

bringing these broad, seemingly different disciplines to the projects we were not sure how it would all fit together at first. Initially we tried to work on collaborative pieces in an '*exquisite corpse*' fashion where one person would start a piece and then pass it on to the next person who then had complete license to change it. While we got some promising results, we found that it required too many meetings in person for our busy schedules and so we decided to focus on our individual work and put it together for exhibits.

During our first show at the Eastin Gallery in Healdsburg we were pleasantly surprised at how well the work fit together and we decided to continue working independently between shows. Where decisions needed to be made by the group we adopted Mary's practice of throwing the I-Ching (a liminal practice), which is something that Frederick Young and I have adopted in our collaborations as well. There was some communication among us regarding the work we were doing, especially for the large exhibit in Seoul, however there were also surprises as work was unpackaged during the set-up for other shows such as at the Piedmont Arts Center.

In this way the Five Looking West collaborations acted as a contrast to the working processes of Frederick Young and I, which were intentionally interventionist and motivated by highly theoretical discussions and aims. This contrast was not a dissimilarity, however, as there has been a great deal of cross-over in terms of what I brought to the Five Looking West discussions as well as the interchangeable use of several sculptures between the projects. I see the differences as a 'rounding out' rather than a break. For me, both were unified by soils, humor, and subtle or not so subtle

interventions. In the case of Five Looking West there was less theoretical conversation, but the common motivations that we shared could easily have led to a great deal of dense theorizing of the work if others had been interested in pursuing it. Had we done so, the character of the work probably would have changed little but might have produced more writing. Collaborations between Fred Young and I, by contrast, have always been based on a common interest in exploring theoretical intricacies and have produced a number of publications.

In the detailed descriptions of the Five Looking West projects in *Soils, Interventions, and Liminal Performativities* I refer to the character of the work as being along the lines of *environmental art*, which I have found to be celebrations of 'place,' local materials, or using "nature" as raw material. Environmental art may be "collaborations with nature" to borrow Andy Goldsworthy's phrase, and they may be so in deep and important ways, but they are not necessarily explicitly *environmentalist art* that carries an interventionist (politically active) sense. My research as found that activism on behalf of soils needs to be transdisciplinary in order to be as effectively comprehensive as possible, and thus environmentalist art calls for transdisciplinary practice, whereas environmental art need not necessarily. The Five Looking West projects have been transdisciplinary by virtue of the fact that most members of the group work in transdisciplinary ways, and certainly as a body, the broad range of disciplines brought to bear have deeply impacted each other in the course of creating our exhibits. Where the contrast lies is that the work of Fred Young and myself is intentionally transdisciplinary, interventionist, and focused on avant-garde philosophies. I brought that

some of that sensibility to Five Looking West with the Jeju Island piece described in *Soils, Interventions and Liminal Performativities*, but more quietly. The two collaborations share interests in location, soils, animalities, and attunement to liminalities to varying degrees and have worked together very effectively during the research and practice that has led to this dissertation.

Other modalities of thought and practice that my collaborators and I have brought to bear on behalf of soils, namely ecological studies, soil science, and sustainable practice have their own chapters or subchapters (*Soils and Agriculture and Soils and Ecology)* that follow, hence I will not outline them here. As is explained in those chapters, environmental data (the plight of soils) calls for transdisciplinary thinking within agriculture, scientific ecology, and social ecology as well. This means that science, agriculture, and ecological philosophy are not separate in the work that my collaborators and I have done, but are enmeshed. For dissertation purposes I have addressed them separately for clarity's sake but have also made an effort to bring forward our related art projects to demonstrate how the applications of these supposedly different disciplines work in concert. As our work continues and moves beyond the scope of a dissertation we have continued to push for the blurring of disciplinary borders to an even greater degree.

Chapter Three

Soils and Interventions

Soils and Agriculture

Pedology is the study of soil's characteristics and behaviors in general terms,[25] and the term *edaphology* mostly refers to the morphology of soils, that is, how they have been formed and how they change over time. Definitions of "dirt" and "soil" may vary depending on who is being asked, and in what context. Helmut Kohnke points out that "it can be defined from several viewpoints with regard to the particular functions in which we may be interested."[26] From a geological perspective, it can be considered as the decomposed surface of rocks ("regolith", a loose covering of heterogeneous material above bedrock). From a pedological view, soil is a "natural body, occurring in various layers, composed of unconsolidated rock fragments and organic matter."[27] Agronomists define it as unconsolidated matter on the earth's surface made up of complex biochemical materials (mineral and organic particles) along with moisture and air, which is able to support plant life.[28] According to Kohnke, the agronomical definition is probably the most appropriate for farmers and ecologists because growing plants is soil's "most important function."[29]

Michael Singer and Donald Munns state that in different contexts the expression of "soils" has two primary meanings. They can be terrestrial cover material of particular "stuff" (Singer's term), soil material, or a blend of components. Or, they can be three dimensionally structured bodies of organic and mineral material combinations occurring

25 The history of a debate over soil is found in *Philosophical Development in Pedology in the United States*: Hilgard, Eugene and Milton Whitney in *Footprints in the Soil: People and Ideas in Soil History*. Oxford: Elsivier, 2006. (149).
26 Kohnke, Helmut. *Soil Science Simplified* (Fourth Addition). Long Grove, Il: Waveland Press, 1995.
27 The Soil Science Society of America.
https://www.soils.org/
https://www.soils.org/discover-soils/soil-basics/what-makes-soil-soil
(Viewed 09/12/13).
28 For definitions see Craul, Phillip J. *Urban Landscape Design.* New York: Wiley & Sons, 1992. (10).
29 Helmut Kohnke, Helmut. *Soil Science Simplified*. op.cit.

naturally within a landscape.[30] The first definition of soil is the more general. The second, according to Singer and Munns, is the more formal definition of a "soil" as a natural body in a landscape, used by soil scientists to describe the development, behavior, and taxonomies, or classifications of soils as parts of ecological systems.

Nearly all soils contain at least some of the basic components generally considered to define their make up: rocks (the parent material of soil), gravel, sand, silt, clay, organic material, micro-fauna (microbes), micro-flora, air, water, and an organic top layer of bio-fall and living fungus (mycelium) networks which make up the humus layer. According to the Soil Science Society of America, it may be possible to have "a soil" that is all sand, all silt, or all clay, but only in rare examples.[31] Most often soils exist in combinations of these materials, along with their organic components.

Soils vs. Dirt

In soil taxonomy there are thousands of identified soil types that are classified according to orders (morphological characteristics), and series (modalities) that describe different mixtures and behaviors in different environments.[32] It is in discussions about differing types of soils and their behaviors that defined differences between "soil" and "dirt" arise. To define an individual soil type, it must contain all of its structure,

30 Singer, Michael and Donald Munns. *Soils (An Introduction)*. Saddle River, NJ: Prentice Hall, 1999.

31 SSSA
https://www.soils.org/(Viewed 09/12/13).
32 Kolay, A. K. *Soil Genesis, Classification Survey, and Evaluations* New Delhi: Atlantic Publishers, 2007. (90).

including all sources of its components. The characteristics of individual soils are largely dictated by their morphology, thus the bedrock underneath that supplies mineral components (nutrients) must be counted. Those mineral components can influence or even dictate the vegetable cover above them. The vegetable cover in turn falls and rots to contribute to the body of the soil, and acts an intermediary between the atmosphere (climate) and the soil while it is alive. In other words, all aspects of soil's three-dimensional body make up the type of soil that it is. Three dimensional soil bodies are referred to as pedons, which contain what soil scientists have deemed to be "the minimum volume of earth necessary to contain all the properties of a soil individual."[33] Soil pedons are defined as being, at minimum, one meter by one meter in width, and one and a half meters deep. If soil is removed from its natural environment through some form of disturbance, it ceases to be a full pedon, and therefore becomes "soil material," or what would otherwise be referred to as "dirt."

There are exceptions to the rule of pedalogical dimensions for soils, however. Not all soils are one and a half meters (five feet) deep. In fact, if the average depth of topsoil world-wide is only eighteen inches, then many soil types fall well short of these dimensions but are still considered "soils". The important factors are that they are in their natural environment, in contact with their parent material, thus, edaphologically still developing, at least potentially. Thus, an equally appropriate definition of a pedon might be one meter by one meter by whatever is above the bedrock. In the context of environmental changes, or disturbances, soils may be said to be in typological transition,

33 Singer, Michael and Donald Munns. *Soils (An Introduction)*. op.cit. (88).

while still remaining soils. When disturbances become drastic enough to cause soils to become mobile then they become "dirt."

There are soil ecologists such as William Bryant Logan, Vandana Shiva, and others who are well aware of the scientific distinctions but don't always differentiate between "soil" and "dirt" in their discussions. As Singer and Munns point out, the pedalogical distinction between dirt and soil is more in the formal context of taxonomical comparisons among soil orders and series than in their larger functions. Whether or not the distinction is important is contextual therefore.[34] If one particular soil type is necessary for a particular function, then disturbances significant enough to impact its body, such that it ceased to be a "soil" in formal terms, could matter a great deal.

On the other hand, when discussing soil and dirt in general terms the distinction may be somewhat blurry. Shiva often refers to agricultural "dirt" in discussing its ecological issues.[35] For Logan, the difference in terms is largely aesthetic:

> Dirt is a good word. Many people would rather use the word "soil", but that sometimes strikes my ear as sexless and ugly. "Earth" can be confusing because it means the whole ball of wax. It takes

34 This may be true also with regard to the question of "are they alive?" Classification of life forms is generally based on the Linnaean System of 1735, with some variation. Viruses ("infective agents") are excluded by some sources such as the Oxford English Dictionary due to their dependence on a living host-body for reproduction. However, the inability to self-reproduce without human or other outside intervention applies to a widening range of more complex plants, organisms, and domesticated animals. The inability of many species to reproduce without some form of extra-species symbiosis or mutualism is commonplace. Soil's definition usually includes living matter, but it also defined as disaggregated material, thus, it may occupy a somewhat unique classification among 'living' entities. http://www.ucmp.berkeley.edu/history/linnaeus.html (Viewed 10/23/13).

35 Shiva, Vandana. *Making Peace With the Earth*. London: Pluto Press, 2013. She has referred to "dirt" and "soil" interchangeably in numerous interviews and lectures that I have come across during the course of this research.

> dirt to grow and oak from an acorn. It takes the rot and the shit that is the root meaning of "dirt" in Old Norse. It takes the hot and the wet to awaken the cold order of the mineral world.[36]

In response to the question "what is good dirt?" Logan's mentor, Hans Jenny replied: "good for what?"[37] Likewise, the distinction between dirt and soil depends, in part, on when, and perhaps, what is at stake. As stated in chapter one, a debate over idiomatic use of these terms is not considered necessary or useful in this discussion. When discussing some of the ramifications of human treatment of soil as a resource, it may be useful to think about soil's potential abjection, partly due to its almost inevitable manure content, especially in agricultural contexts. However, there can be exceptions found to most prevailing sensibilities about whether "dirty" and "soiled" have significantly different meanings. There are also exceptions to be found in the physical circumstances on which scientific definitions are predicated. As the SSSA states, there may be soils that are far shallower than a standard pedon, and all but devoid of some materials generally considered to be key components. There are soils at the bottoms of shallow ponds composed almost entirely of clay that support thriving ecosystems. As Stephen Sillett at Humboldt State University has shown, there are soils in crotches of Sequoia trees hundreds of feet in the air, only indirectly in contact with parent material, which have been supporting whole ecosystems for hundreds of years.[38] Thus, for the purposes of this discussion, "soil" is considered to be functionally eco-systemic (albeit

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36 Logan, William Bryant. *Dirt, The Ecstatic Skin of the Earth.* New York: W. W. Norton, 2007. First printed in 1995.
37 Ibid. (62).
38 Stephen Sillett. Humboldt State University Institute for Redwood Ecology. http://www.humboldt.edu/redwoods/ (Viewed 09/20/13).

with the admissions of some scientific ambiguities), whereas "dirt" will generally be used to describe 'soil material' in a state of radical disturbance or mobility.

> No single property distinguishes all soils from all rocks. We have said that soils are natural, three-dimensional, vertically differentiated portions of the earth's surface. But some rocks have these properties. Soils, however, are generally softer, less dense, and less consolidated than rocks are. Some soft rocks and hard soils, however, are exceptions. The ability to grow plants used to be part of the non-engineer's definition of soil until the surface of the moon was sampled and called soil. If we accept this moon material as soil, we cannot specify that plants must be growing on material for it to be called soil. But we can specify that soil have the potential to grow plants. Thus, moon soil, if brought to earth and given water, would meet this definition.[39]

The structure of soil

According to the SSSA, soils are three-dimensional arrangements of mineral and organic particles into clumps called pedons, or peds. They usually contain geologic material (parent material) weathered from the bedrock such as gravel.[40] Above the geologic layers of pedons is the solum comprised of sand, clay, silt, combinations of living and dead organic material, and some plant cover.[41] One of the principle features of soil is texture, which comes from the weathered rock particles of sand (course), silt (fine), and clay (microscopically fine). Some soils have sticky or fibrous textures near the top (humus) layer caused by organic material. Organic content, like clay accumulations, add

[39] Singer, Michael, and Donald Munns. *Soils (An Introduction)*, op.cit.
[40] Van Breeman, Nicol and Peter Buurman. *Soil Formation* Dordrecht: Kuwer Academic Publishing, 2007. (125).
[41] Schaetz, Randall J. and Sharon Anderson. *Soils: Genesis and Geomorphology*. Cambridge: University Press, 2005. (50).

stability to soil, whereas sand is highly permeable, and silt is highly mobile.[42] The texture and structure of soils usually indicates their behavioral characteristics.

Pedalogical behavior refers to its fabric and density (measured by the relative amount of pores and solids), drainage (hydrology), stability (susceptibility to erosion), how it compacts (frangibility), the weathering (decomposition) rates of its parent content, and fertility (nutrient availability).[43] Another characteristic of soils is their color, which is often indicatory of mineral content, as with reddish soils that are high in iron. Organic material can also affect the color of soils, and having large amounts of decomposed organic material is usually associated with rich dark or black soils. With some exceptions, organic content is considered to mask other coloring agents.[44]

As mineralogical materials such as water-soluble chemicals and clay (silica) crystals are drawn up from below, and other mineral elements, silt, and organic material are washed down from above, they settle into permeable and sometimes mixed but distinguishable layers. These layers are referred to as horizons, and their characteristics as a whole describe the profile of a pedon. The United States Department of Agriculture Soil Survey Manual defines five master horizons above the bedrock layer (R horizon).[45] Above the hard bedrock is the C horizon of the subsoil made up of decomposing rock aggregates and gravel. Above the gravel layer is the Bt2 horizon of the subsoil

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[42] Parker, Rick. *Plant and Soil Science: Fundamentals and Applications*. Clifton Park NY: Delmar, 2009. (112).
[43] Pansu, Marc and Jacques Gautheyrou, *Handbook of Soil Analysis: Mineralogical, Organic and Inorganic Methods*, New York: Springer, 2007. (4).
[44] Peterson, James F. and Dorothy Sack, Robert Gabler. *Physical Geography (10th Edition).* Belmont CA: Brooks/Cole 2011. (55).
45 United States Department of Agriculture Soil Survey Manual. http://soils.usda.gov/technical/manual/ (Viewed 12/11/13).

comprised of mostly decomposed ("obliterated") rock and silicate clay deposits. The Bt1 horizon is the upper clay layer, generally containing more sand than gravel. Above the Bt1 horizon is the E (eluvium, mineral) horizon, in which most clay has leached out, leaving concentrations of sand and silt. Near the surface is the A horizon, also a mineral layer, but with some accumulation of decomposed organic matter. At the surface is the O horizon, layers dominated by living and decomposing organic material such as leaf mulch and mycelium mats (see figure 3-1 *Pedon Profile*).

In the Dirt Gallery exhibit (explained in greater detail in chapter six), there was a portion of a pedon that had been spared out of the excavation with its profile horizons labeled. It was dug on large levy plateau above the Russian River, purportedly in twenty six feet of soil above the water table, thus the R and C horizons were inaccessible, however, the A and Bt2 horizons were distinct enough, and formed part of the exhibit (see figure 3-2 *Dirt Gallery "Pedon"*). The gallery, and much of the following art work

Figure 3-1

Pedon Profile
Ink and Zamora Clay Loam on Canvas

2013

Figure 3-2

Dirt Gallery "Pedon"
Yolo Loam
Healdsburg, Ca

2010

described later in this dissertation has been composed of Russian River area soil varieties, especially Yolo Loam, whose name is derived from the north Central Valley county where it was first identified, and indicates its soil class.[46]

46 See the American Society for Testing and Materials, report in *Dispersive Clays, Related Pipings and Erosion in Geotechnical Projects*. Committee D-18 on Soil and Rock for Engineering Purposes, 1977.

There are six principle *soil classes*, divided by their texture, which begin to make up the taxonomy of different soils:[47] *loam*, wherein the proportions of sand, silt, and clay are roughly equal or similar.[48] *Sandy loam*, which may be either very fine, or very course, but contains sufficient amounts of silt and clay to hold it together when wet. *Silt loam*, which has a smooth texture due to being dominated by very fine particles. *Silty clay loam*, which is smooth to the touch when dry and becomes sticky or slick when wet. It has noticeable amounts of clay in it, but silt is still the dominant feature. *Clay loam* is dominated by clay although sand and silt are still present.[49] The Zamora and Yolo Clay Loams in and around Healdsburg are good examples, as the clay content is dominant enough for it to be used in ceramic production, but not without difficulty, as it is hard to process out all of the sand and silt. One characteristic is that when wet it is extremely sticky, almost glue-like, whereas commercial clays of greater purity tend to be more slippery it texture.[50]

There are at least six corresponding *shapes* of soil components, or the aggregates they begin to form based on particle texture:[51] *Single grain* soils, made up of individual sand grains that are not held together. *Granular soils*, made from porous granules, often held together by organic material or clay, generally found in the top layers less than a

47 Kaufman, Robert and Cutter J. Cleveland. *Environmental Science*. New York: McGraw Hill, 2008. (318-319).
48 For a discussion of soil aggregate composition see Pachepsky, Yakov and Walter J. Rawls, *Development of Pedon Transfer Functions in Soil Hydrology, Developments in Soil Science*. Amsterdam: Elsevier, 2004. (143).
49 *Soil Survey Manual*, (Washington D.C.: U.S. Government Printing, 1993. (136-146).
50 Miller, Vernon C. *Soil Survey, Sonoma County, California*. op.cit. (88).
51 It is in the field of forensics that some of the closest observations of soil are conducted and in that field the smallest difference between locations is required for proof. See Ritz, Karl, Lorna Dawson, and David Miller. *Criminal and Environmental Soil Forensics*. New York: Springer, 2009. (116).

foot below the surface. Platy soils have thin vertical dimensions, often with high clay contents, and found in compact layers, as with hard pan. Blocky soils are usually those with a high clay content, generally found a foot or two below the surface. Prismatic soils are those whose aggregates have a greater vertical than lateral dimension, but are thicker than plates. Massive soils are made up of large clods with no definite shape. They are usually found two or three feat from the surface, depending on conditions.

Additionally, there are eleven soil orders that are designated to contain all the soils to be found in the world.[52] The soil orders and their diagnostic characteristics are as follows:

. Entisols - Simple soils with little or no subsoil horizons.

. Inceptisols - Soils with minimal development and little or no subsoil clay.

. Aridsols - Soils of hot and dry regions.

. Vertisols - Soils with no subsoil horizons, but lots of clay.

. Mollisols - Thick, soft, dark soils associated with grasslands, such as prairie soils.

. Alfisols - Subsoil accumulations of clay, not strongly leached.

. Spodosols - Subsoil accumulations with high iron contents.

. Utisols - Subsoil accumulations of clay that are strongly leached.

. Oxisols - Products of extreme leaching, with Fe, Al oxides, and quartz remaining.

. Histosols - Dark, organic soils with little mineral content.

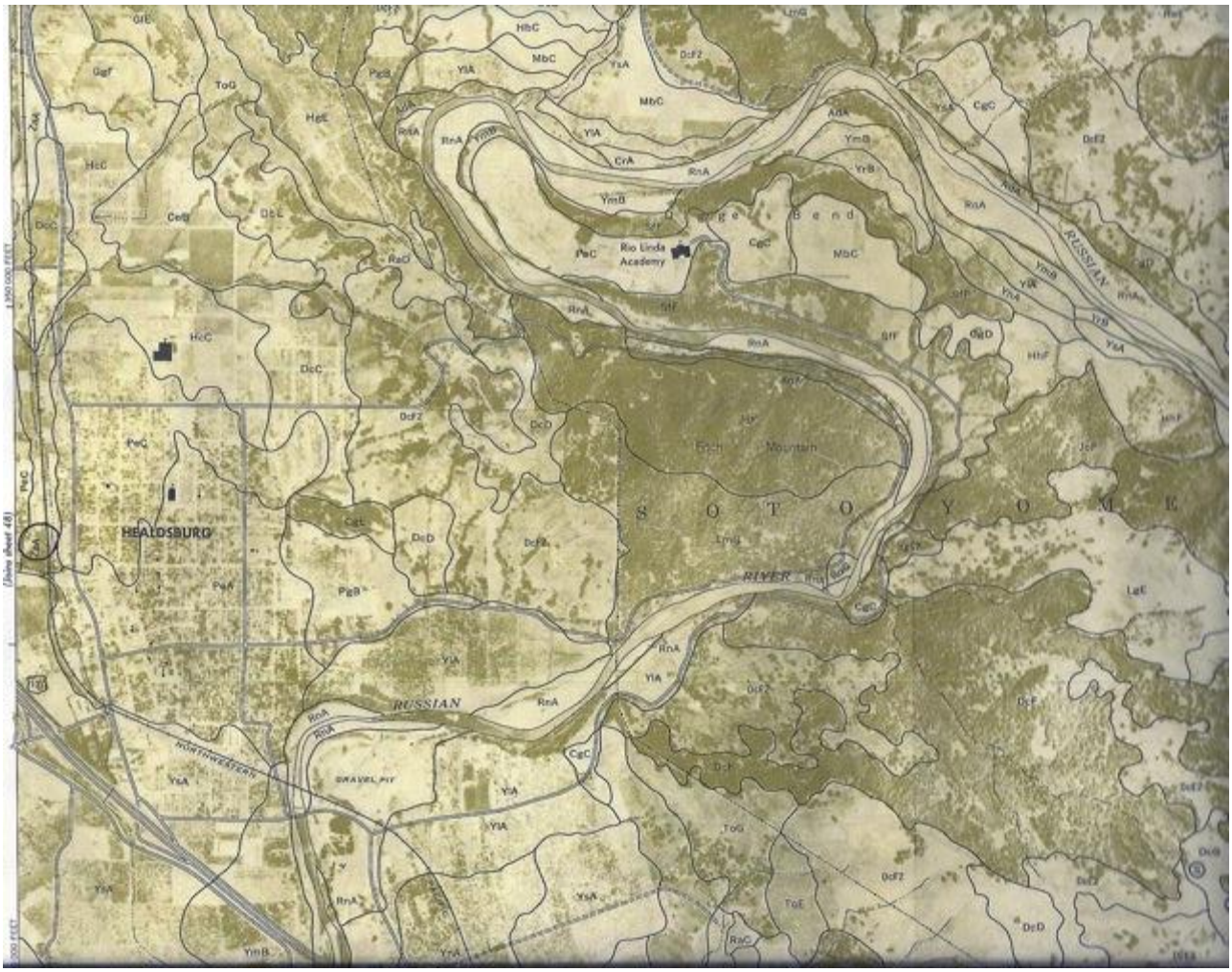
. Andisols - Mineral soils formed on volcanic ash as the parent material.

[52] ww.physicalgeography.net/fundamentals/10v.html (Viewed 10/06/13).

These are considered to be at the lower level of soil classification systems, that is, very general in their descriptions and without much specificity. They are based on climate, profile (the presence or absence of distinct layers), acidity, mineral content, and other broad environmental factors. The more detailed system of soil taxonomy is that of the soil series. Soil series is based on the identification of a typical pedon, with a closely defined range of characteristics. The climatological and topographical factors that influence designations in soil orders remain very important determinants of series, however. In looking at soil survey maps one finds that otherwise identical materials can change designations at the edge of an embankment or even minor topological feature (see figure 3-3 Sonoma County Soil Map). A series description of the Yolo soils with which we work is as follows:

> The Yolo series is defined as having certain horizons, each with a specified color, structure, and texture, as well as other properties. For a soil to be in the Yolo series, it must have all the properties of the modal Yolo soil and be within each property's acceptable range. The central or modal Yolo pedon has two horizons, A and C and is 100 cm thick, with a range in thickness from 80 to 120 cm. A soil like the Yolo in every other property, but only 70 cm thick, or thicker than

Figure 3-3



Sonoma County Soil Survey Map
(Courtesy of USDA NRCS)

(Foss Creek Zamora Loam
area circled on left)

120 cm would not be Yolo. In this way, an infinite variety of individuals can be categorized into units that, though numerous, are understandable and useful.[53]

The exactitude of series designations may be noteworthy here, as our activities that have been concerned with site-specificity have followed the USDA Sonoma County Soil Survey map with great care, and yet have found variations that technically should have modified the series designation on a given spot. Being on the edge of the continental and pacific plates, Sonoma County is home to great geologic variety. It is not practical to propose taking core samples every three feet across the entire county, thus, it is understandable that survey maps are only accurate up to a point. From the perspective of art practice and ecology these variations may or may not matter a great deal. From the perspective of agriculture or engineering, they could be of critical importance, which is probably why the county surveys are used as preliminary tools only. The Yolo and Zamora clay loams that have been the materials for some of our work are virtually identical in all perceivable aspects. The Zamora is found in the bed of Foss Creek near where it empties into the Russian River. Its designation is based on the fact that the Zamora clay is found as a ten-foot deep Bt horizon below the A layer, an eighteen-inch deep horizon of gravely loam. In other words, the materials may be nearly identical in character, but differently distributed. We are still actively working to determine if there are any behavioral differences between Zamora and Yolo clays for ceramics.[54] (See Figure 3-4).

53 Singer, Michael and Donald Munns. *Soils (An Introduction)*, op.cit.
54 One approach to this research is found in Perez-Rodriguez, J. L. (ed). *Applied Study of Cultural Heritage and Clays*. Madrid: CSIC, 2003. (50).

Figure 3-4

Zamora Clay Loam Profile
Foss Creek, Healdsburg, Ca

2013

A detailed description of soil chemistry would exceed the scope of this dissertation, however the following list shows what is considered to be an average composition of the chemical proportions in agriculturally viable soil, in order of largest percentages by weight:

Oxygen (50%), Silicon (36%), Aluminum (5%), Iron (2%), Potassium (2%), Carbon (1%), Sodium (0.8%), Calcium (0.7%), Magnesium (0.5%), Titanium (0.4%), Hydrogen (0.2%), Manganese (0.1%), Nitrogen (0.1%), Phosphorus (0.05%), Sulfur (0.02%) as well as other elements found in detectable trace amounts.[55]

Among the aggregate materials that make up soil only organic material and clay are considered chemically active, whereas other materials such as rock particles are considered mostly inert. Clay and organic matter are associated with positively charged ions (cations), which affect the exchangeability of oxygen and other elements. Negatively charged elements (anions) such as phosphate, sulfate, nitrate, and chloride are also important plant nutrients but depend on the exchangeable cations to balance the acidity of soils, which bears significantly on plant fertility.

Soil's acidity is referred to as soil reaction, measured in pH factors of acidity or alkalinity. A zero to seven pH factor is acidic soil, which accounts for half the arable soil in the world. Most plants prefer slightly acid or close to neutral pH factors, though some, such as potatoes, blueberries, and sweet potatoes thrive in soils with acidic pH factors of

55 The New Mexico State University Gardening Advisor.
http://aces.nmsu.edu/desertblooms/nmsugardening/ (Viewed 10/23/13).
http://aces.nmsu.edu/academics/pes/robert-flynn.html (Viewed 10/23/13).

four to six percent.[56] There are plants such as some evergreen shrubs, and a few vegetables such as okra that like alkaline soil. High acidity in soil is caused by an excess of hydrogen ions attached to clay particles, which, among horticulturists is treated by adding lime (calcium carbonate), which neutralizes the clay. Alkaline soils found in areas of low precipitation (an extreme example would be the Alkali Deserts in Nevada), or in areas where the soil has been heavily irrigated.[57] Horticulturists who are trying to amend alkali soil treat it with granulated sulfur or peat moss to lower the pH factor.

One of the potentially unique features of our *Seed Bomb* project (described in detail in chapter four) has been the attempt to amend the local Zamora Clay Loam used in the seed bomb figurines prior to throwing them out on location. The Zamora and Yolo Clays are extremely sticky, literally glue-like compared to commercial Amador Clay (Ione, California).[58] Since sticky soils are associated with high alkalinity, we experimented with lowering the pH balance using a variety of means including plant food, small amounts of biodegradable soap, and coffee. Lowering the pH of the clay also brought it closer to that of the O and A layers of the areas where the bombs were scattered. (See figure 3-5 *Seed Bomb* with pH meter).

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56 Plant pH preferences:
http://www.offthegridnews.com/2013/06/19/25-fruits-and-vegetables-to-grow-in-acidic-soil/ (Viewed 10/24/13).

57 See a description of these soils in Gregory, Peter J. and Stephen Nortcliff. *Soil Conditions and Plant Growth.* Oxford: Wiley Blackwell, 2013. (227).
Plant pH preferences
http://www.offthegridnews.com/2013/06/19/25-fruits-and-vegetables-to-grow-in-acidic-soil/
(Viewed 10/24/13).

58 Ione, California (Amador County)
http://www.ioneminerals.com/ (Viewed 10/24/13).

Figure 3-5

Seed Bomb
Zamora and Amador Clay
Wildflower Seeds and Life-Box Contents
(Courtesy of Paul Stamets)

2013

Formation of soils

Soil is created by a wide variety of processes and interchanges termed soil-forming factors, which include parent material, climate, organisms, topography, and time. The SSSA and Smithsonian Institute refer to them as climate, organisms, relief (topography), parent material, and time (CLORPT).[59] Parent material weathers upward through a variety of forces. In contact with moisture, especially in combination with agitation from geologic movement or gravitational water flows, rock dissolves. As rock dissolves its minerals become waterborne and mobile. Rock may also decompose (crumble) as it expands and contracts repeatedly due to changes in temperature (twenty feet and above can be effected by seasonal temperatures, six feet and above can be effected by daily temperature changes). Liquefied minerals rise against gravitational pull through a variety of means such as upward pull caused by evaporation at the surface, and through the uptake of plant roots. There is also capillary action caused by the surface tension of water molecules in confined spaces such as tiny pores and channels made by fine roots etc. Parent material may also be brought towards the surface by tectonic and seismic activity.[60]

As moisture-borne minerals from parent material are drawn upward in soil, there is also downward movement of components, which interact with each other. Soil is a

59 Smithsonian Institute, National Museum of Natural History (Forces of Change). http://forces.si.edu/soils/02_01_04.html
(Viewed 10/25/13).
60 Research in this area of tectonic and seismic soils has been carried out in Antarctica but is applicable everywhere in principle. Tedrow, John C. *Antararctic Soils and Soil Forming Processes*. Washington DC: American Geophysical Union, 1966. (5).

porous material, especially if comprised of course particles like sand. Even in aggregated portions of soil there are pores and cracks, some made by animals and plant roots. Micro-pores are tiny holes created by fine plant roots, small worms, and natural free space in between particles. Macro-pores are larger tunnels and cracks, some made by larger roots, gophers, etc. Medium textured soils, such as those considered to be agriculturally ideal, may be as much as fifty percent air space by volume.[61] Thus, when the soil surface is struck by rain, or encounters run-off it tends to be highly absorbent of water until it reaches a saturation point. Some of the water running down through pores carries mineral and organic material, and either encounters a stabilizing horizon of clay, or reaches bedrock eventually, where it begins to dissolve minerals from the rock surface. There is also the downward extension of plant roots, which push down into the soil, pulling up moisture and minerals, and transferring down other minerals and gases.[62] As plants die, their roots decompose or are eaten by small animals and transferred to castings, adding nutrients to the soil.

The root action of plants, in combination with bio-fall is one of the primary forms of soil building. In the American Mid-West there are areas of "breadbasket" states such as Oklahoma, Nebraska, and Iowa, famous for having among the deepest and richest soils in the world. Soil depths in the prairie states may be more than thirty feet deep, and their formation is largely accredited to deep rooting seasonal grasses that put roots down (deeply by annual standards) and then die off each year, adding their nutrients and fiber mulch to the soil. The prairie soils are also accredited partly to the massive herds of

61 Fredlund, D. G. and Harianto Rohardjo. *Soil Mechanics for Unsaturated Soils*. New York: Wiley & Sons, 1993. (180).
62 Gregory, Peter J. *Plant Roots Growth Activity and Interactions with Soil*. Oxford: Blackwells, 2008.

bison, which roamed across them in the tens of millions, converting grasses to manure, and perhaps influencing the fact that these prairies remained un-forested for thousands of years.[63] By contrast, forest soils, (though they vary widely in their characteristics), such as those of the Amazon Rain Forests are notoriously "poor", that is, shallow and highly susceptible to degradation when disturbed.[64]

The rate of formation of soils varies widely depending on the environment, therefore estimates about average numbers do as well. In most circumstances, given a reasonable amount of rain and plant cover, it takes at least one hundred years to generate an inch of new topsoil. Upper estimates for more arid regions, or those subject to very active weather, may be five hundred years or more.[65] This makes it a non-renewable resource in human time-scales, therefore, and makes its depletion a matter of great concern.[66] The rate of soil formation may also come as a surprise to some (even in ecological circles), especially when looking at forested areas that may drop an inch or more of mulch on the ground every season. However, bio-fall does not always get processed through the humus layer quickly, nor equate to rapid soil growth.

63 Ebeling, Walter. *The Fruited Plain: The Story of American Agriculture*. Berkeley: University Press, 1979. (37).
64 The issues are put into historical context by Anderson, Robin L. *Colonization as Exploitation in the Amazon Rain Forest 1758-1911*. Gainesville: University Press of Florida, 1999. (3).
65 Sperling, Daniel. *New Transportation Fuels: A Strategic Approach to Technological Changes*. Berkeley: University of California, 1988. (349). gives even longer time spans for one inch of topsoil renewal.
66 Van Kooten, G. Cornelis. *Economics and Sustainable Development: Economic Policies and the Common Good*. Vancouver: University of British Columbia, 1993.

Early Agriculture

Depletion and exhaustion of soils by human populations is not a new phenomenon, though it is important to note that it has increased dramatically since the Industrial Revolution, and exponentially since the Green Revolution.[67] As Daniel Hillel states:

> In many of the older countries, where human exploitation of the land began early in history, we find shocking examples of once-thriving regions reduced to desolation by man-induced soil degradation. Some of these civilizations succeeded all too well at first, only to set the stage for their own eventual demise...We need only fly over what is now part of Iraq to observe wide stretches of barren, salt encrusted terrain, crisscrossed with remnants of ancient irrigation canals. Long ago, these were fruitful fields and orchards, tended by enterprising irrigators whose very success inadvertently doomed their own land.[68]

In an interview that I had with Dahr Jamail on the state of the land in Iraq, he described a tension between the pride that modern Iraqis have in the remaining fertile regions, their awareness of the fragility of these remaining regions, and the practices driven by desperation as a result of infrastructural devastation by the Gulf Wars.[69] However, while climatic changes and conflict may have had important effects, according

67 Fitzgerald-Moore, P. and B.J. Parai. *The Green Revolution.* Calgary: University Press. www.ucalgary.ca/~pfitzger/green.pdf (Viewed 11/01/13).
68 Hillel, Daniel. *Out of The Earth, Civilization and the Life of the Soil*. Berkeley/Los Angeles: University of California Press, 1991.
69 Lancaster, Linus. *The Place of Iraq, A Conversation with Dahr Jamail*. *Politics and Culture.* October, 02, 2009.
http://www.politicsandculture.org/2009/10/02/the-place-of-iraq-a-conversation-with-dahr-jamail-and-linus-lancaster/ (Viewed 06/01/15).

to Hillel, the current state of the "Fertile Crescent" is due in large part to prolonged exploitation by forest burners, cutters, irrigators, and grazers.[70]

> The once-prosperous cities of Mesopotamia are now tells, mute time capsules in which the material remnants of a civilization that lived and died there are entombed. Similarly ill-fated was the ancient civilization of the Indus Valley in present-day Pakistan. Other haunting examples of soil abuse on a large scale can be seen in the Mediterranean region, which has borne the brunt of human activity more intensely and for a longer period than any other region on earth. Visit the hills of Israel, Lebanon, Greece, Cyprus, Crete, Italy, Sicily, Tunisia, and eastern Spain.

As David Montgomery points out in *Dirt (The Erosion of Civilizations)*, although many people are aware of how dependent we currently are on a small number of modern farmers, few truly recognize the fundamental importance of how we treat our dirt for securing the future of civilization as we know it.[71]

> Many ancient civilizations indirectly mined soil to fuel their growth as agricultural practices accelerated soil erosion well beyond the pace of soil production. Some figured out how to reinvest in their land and maintain their soil. All depended on an adequate supply of fertile dirt. Despite recognition of the importance of enhancing soil fertility, soil loss contributed to the demise of societies from the first agricultural civilizations to the ancient Greeks and Romans, and later helped spur the rise of European colonialism and the American push westward across North America.

70 Hillel, Daniel. *Out of the Earth, Civilization and the Life of the Soil*. op.cit. (4).
71 Montgomery, David R. *Dirt (The Erosion of Civilizations).* Berkeley/Los Angeles: University of California Press, 2007.

Examples of the impacts of soil abuse and degradation such as the American Dust Bowl of the 1930's, the African Sahel in the 1970's, the denuding of the Amazon Basin, and the current statistics on global soil loss show that the examples from antiquity are not isolated. As devastating as the loss of viable soil has been for individual societies throughout history, the world is now reaching a point where soil exhaustion is apparent on a global scale. A 2004 article in the Guardian describes global soil loss in the following terms:

> Although more than 99% of the world's food comes from the soil, experts estimate that each year more than 10m hectares (25m acres) of crop land are degraded or lost as rain and wind sweep away topsoil. An area big enough to feed Europe - 300m hectares, about 10 times the size of the UK - has been so severely degraded it cannot produce food, according to UN figures.[72]

The SSSA has reported that soil exhaustion and erosion is resulting in its loss at a rate of ten tons per acre per year as a global average. Other estimates are for the loss of twenty four billion tons annually.[73] This includes regions that have already been crippled by soil loss, as well as still fertile areas such as parts of the American mid-west where topsoil is still productive and may be twenty feet deep. However, even these fertile plains areas have already lost fifty to seventy percent of their previous volume, mostly within the last hundred years.

72 Radford, Tim. *"Soil Erosion as Big a Problem as Global Warming, Say Scientists"*, The Guardian (US Edition). February 14th, 2004.
73 Montgomery, David R. *Dirt (The Erosion of Civilizations)* op. cit.

> Should we be shocked that we are skinning our planet? Perhaps, but the evidence is everywhere. We see it in brown streams bleeding off construction sites and in sediment-choked rivers downstream from clear-cut forests. We see it where farmer's tractors detour around gullies, where mountain bikes jump deep ruts carved into dirt roads, and where new suburbs and strip malls pave fertile valleys. This problem is no secret. Soil is our most underappreciated, least valued, and yet essential natural resource.[74]

Historians blame a variety of causes for the decline of societies and cultures, such as disease, deforestation, conflict, and climate change, among others. These causes may be more or less significant in different cases. As Montgomery points out, historians and archeologists tend to dismiss "single-bullet" theories.[75] However, the way that people have treated the dirt beneath their feet has been of literally fundamental importance, potentially imposing a life span on their societies.

In contrast to Jared Diamond who has called agriculture the "greatest mistake in human history,"[76] Montgomery states that there are two fundamentally different outcomes that agriculture can have for soils.[77] They can improve it or degrade it. Agriculture is not necessarily destructive. The difference is in how you treat the soil.

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74 Ibid.
75 Ibid, p. 3
76 Diamond, Jared. "*The Worst Mistake in the History of the Human Race*". Discover Magazine. May, 1987/1999.
77 Montgomery, David R. Dirt (The Erosion of Civilizations) op. cit.

> If you look at most ancient civilizations they share a common story line. Farming starts in the valley bottoms whose soils are delivered by the rivers from soils eroded off of upland environments which refresh the fertility of the alluvial flood plains.[78]

However, as populations grew and spread to those same upland areas, they brought with them the same farming techniques.

> Greece plowed through their hillsides and then the process moved on to Rome. The Romans really loved to plow. They would plow six to nine times a year and quite literally plowed the soil off the Roman heartland in the course of a few centuries.[79]

He states that Western Europe has had a mixed legacy, where some areas plowed their soil away and others did not. Soil exhaustion was part of the impetus for exploration and colonization efforts by some European countries such as Spain and Portugal, whose soil is poor in many areas, and have a history of struggling to grow enough cereal crops to feed their populations. The factors and *encomiendas* in the "new world" served the purpose of growing transportable cash crops whose profits could be used to purchase supplementary grain and other staples.[80] Soil exhaustion is among the legacies of the *encomienda* system, however. Cash crops are frequently nutrient intensive, and can quickly deplete soils, as is true of tobacco and cotton.[81] Some of the westward expansion in the US was driven by concentration on these crops and soil

78 Montgomery, David R. *Symphony of the Soil*, op. cit.
79 Ibid.
80 Said, Edward. *Culture and Imperialism.* NY:Vintage, Random House, 1994.
81 Davis, Donald E. *Southern United States: An Environmental History*. Santa Barbara: ABC:CLIO, 2006. (125).

exhaustion on the plantations, causing people to move on, looking for new cropland to exploit. In a statement on the current state of affairs in parts of Africa, (that could describe any number of instances throughout history), Wangari Maathai of the Green Belt Movement points out that:

> You create micro-deserts where you are and with climate change they form larger areas. So, we start fighting between nomadic and farming communities over land that is not yet desert.[82]

Two Field, Three Field Systems, and Crop Rotation

Early documentation of crop rotation in the form of the Two-Field System in Egypt goes back to at least six thousand BCE.[83] It corresponds to the domestication of cattle in some of the early agricultural societies such as Mesopotamia, Egypt and India, as well as to what Pollan has referred to as "aggressive agriculture" with animal drawn plows.[84] In the Two Field System crops are rotated, with have a given area "resting" (allowed to fallow or remain under natural weed cover) every other year. This was done partially in combination with rotational grazing, as well as incidental manuring during tilling. In addition to the potentially restorative benefit of sparing out areas of land from demanding production, the rotation of crops also guards against the selective nutrient depletion from mono-cropping, and diminishes pathogens that can accumulate in soil whose natural biodiversity has been disturbed. While crop rotation and manuring

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82 http://www.greenbeltmovement.org/wangari-maathai (Viewed 11/30/13).
Maathai, Wangari. *The Green Belt Movement (Sharing the Approach and the Experience).* New York: Lantern Books, 2003.
83 Gorman, Michael E. (ed). *Scientific and Technological Thinking*. Mahwah NJ: Lawrence Erlbaum, 2005. discusses the this system of agriculture in ancient Egypt as part of technology of farming.
84 Pollan, Michael. *Omnivore's Dilemma: A Natural History of Four Meals*. New York: Penguin, 2006.

generally increases soil fertility (especially in combination), fallowing also has some disadvantages with regard to erosion. The amount of topsoil run-off from given regions will vary widely depending on climate and topography. In the Nile flood plains and in the Fertile Crescent soils were frequently replenished by silt-deposits, however, silty soils are highly susceptible to erosion due to fine particulate mater quickly clogging soil pores when wet. In areas that experience monsoons, the hard rains pelting exposed soils contribute greatly to the volume of topsoil lost to run-off.[85] Climate and sediment deposits allowed the civilizations of the Nile Valley and Fertile Crescent to sustain themselves for a long span of time compared to the speed of many regional depletion rates that are now being observed, but, as Hillel and Montgomery have shown, eventually they exceeded the carrying capacity of their land and had to shrink or relocate.

The development of irrigation increased the duration and capacity of land for crop yield. Archaeological evidence shows irrigation canals in Persia dating back to the sixth millennium BCE,[86] with evidence in Peru in the fourth millennium BCE,[87] the Indus Valley by the third millennium BCE,[88] and others throughout the Middle East and Asia by the second millennium BCE.[89] Perennial irrigation was practiced in Egypt and Mesopotamia using dykes and levees to save floodwater (water harvesting) in fields

85 Earthgauge.net
http://www.earthgauge.net/wp-content/CF_Climate%20and%20Civilizations.pdf (Viewed 11/30/13).
86 Howard-Johnson, J. D. *East Rome, Sasanian Persia and the End of Antiquity*. Aldershot, Hampshire: Ashgate Publishing, 2006. (199).
87 Dawson, Christopher L. *"Late Prehistoric and Modern Irrigation Agriculture in Torata, Peru."* Dissertation, Boston University, 2008.
88 McIntosh, Jane. *Ancient Indus Valley: New Perspective*. Santa Barbara: ABC-CLIO, 2008. (117).
89 See the downside in Bell, Alexander. *Peak Water: How we Built Civilization on Water and Drained the World Dry*. Glasgow: Bell and Bain, 2009 (New edition 2012). (101).

themselves and in holding ponds from at least the second millennium BCE.[90] Early examples of terracing in these regions for water retention date from the same time-span, as do examples in Numibia of water-wheel irrigation.[91] Early examples of large capacity waterwheels in Rome date back to a similar period, using river current or animal power on still sections.

Irrigation tends to greatly increase the production capability of land that experiences long dry seasons. Most any soil, given a reasonably deep A horizon (perhaps a meter) can substantially increase yield with the addition of more and more water, for a while. However, irrigation has proved a double-edged sword for soils and humans who depend on them.[92] Fine, silty soils such as those of the Fertile Crescent and the Nile Valley leach quickly through soil pores and accumulate in blockages that lead to limited drainage, the tendency for saturation, and run-off. These soils can easily become compacted, and may begin to form hardpans during dry spells. As water begins to run across the surface of fields it carries increasing quantities of topsoil and forms rivulets, which in turn expose more surface area to wind and subsequent run-off. The effects of erosion are not always immediately apparent, in part due to *isostacy*, wherein the diminished weight from topsoil depletion allows bedrock to be pressured upward by subterranean forces. As a result, there can be significant losses of topsoil in a given region without apparent changes to the contours of the land.

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90 A full description is given in Nicholson, Paul T. and Ian Shaw. *Ancient Egypt Materials and Technology*. Cambridge: University Press, 2000. (514).
91 Breckle, Siegman W. et.al. (eds). *Sustaining Land Use in Deserts*. London: Springer, 2006.
92 Hobbs, Joseph John. *World Regional Geography*. Belmont CA: Brooks/Cole, 2006. (253). gives a discussion of both sides of the issue of dams and irrigation.

Salinization with mineral salts and deposits from evaporated water is also a common result of sending water through open canals and ponds (open irrigation).[93] The capillary action that draws mineral nutrients from the R and C horizons into soil can also draw salts to the surface at much faster rates than those for which a given soil is calibrated in a particular climate with large amounts of added water. The further the water has traveled, and the longer it is stored, the more opportunity it has had to evaporate, leaving higher concentrations of water-born salts. These are deposited on soil surfaces and leach into the upper profile, hastening evaporation and the additional draw that it has on subsoil minerals. Excess mineral content can "burn" plants and raise the alkalinity of soil to beyond its ability to sustain continual crop yield. The resulting fallow surface creates a vicious cycle of topsoil degradation.

In the sixth and seventh centuries CE the Three Field System was adopted in parts of Europe that had reliable summer rains.[94] The Three Field System consists of dividing a given portion of land into three, growing two annual crops, an autumn crop of grain, a spring crop of grain and legumes, and fallowing one third. The frequent rotation in combination with increased manuring increases the yield of the land, while the legumes restore usable nitrogen to the soil. The increased yield and variety had the effect of raising the nutrition level of peasant farmers and guarding against crop-failure driven famines. It also produced enough of a surplus in some grains to bring the horse into use for plowing, which was faster than oxen. Versions of the Three Field System continue to

93 See the importance of this issue for many sites in *Irrigation in the Near East Region in Figures*, (Rome: Food and Agriculture Organization of the United Nations, 2007. (233).

94 http://www.britannica.com/EBchecked/topic/593743/three-field-system (Viewed 08/15/13).

the present day, though on a large commercial scale they have been largely superseded by the use early synthetic fertilizers during the mid-nineteenth century Industrial Revolution, and by Haber-Bosch nitrogen fertilizers during the Green Revolution (1940's-).[95]

In the sixteenth century the Four Field System was adopted in Waasland and other areas of central Europe.[96] It was popularized by Charles Townshend in England in the eighteenth century and is considered an important component of the British Agricultural Revolution.[97]

> The innovations in this four-year rotation system were turnips and clover. Turnips were not a new crop to English farming because they had been grown in East Anglia for use as cattle feed, fodder for livestock, during the winter months, since the 1660's. However, this was the first time they had been used in crop rotation. Charles Townshend was later to be known as "Turnip" Townshend because of his use of this crop in the four-year rotation system.[98]

Agri-business and Mono-cropping

Mono-cropping refers to the large-scale cultivation of a single species of plant, often over large areas, for repeated growing seasons. Some mono-cropping predates the industrial revolution and was among the causes of observed soil exhaustion and crop

[95] http://www.drlwilson.com/ARTICLES/SUPERPHOSPHATES.htm (Viewed 08/15/13).
[96] Van Houtte, J. A. *An Economic History of the Low Countries, 800-1800*. London: Wiedenfeld and Nicholson, 1977. (150).
[97] http://www.saburchill.com/history/chapters/IR/003f.html (Viewed 10/17/13).
[98] Ibid.

failure in antiquity.[99] Following World War II, in the United States, certain farmers were given subsidies that were specific to single crops such as tobacco, wheat, corn, cotton; a practice of rewarding those who engaged in mono-cropping. This form of agriculture became more profitable than small family operated farms and consequently led to an increase in the size of farms, and new methods of cultivation were required that used developing technologies. Even simple inventions had ramifications for soil use. For example, the introduction of the (polished) steel pointed plough in the nineteenth century, invented by John Deere meant that the long-grass prairies could for the first time be ploughed and planted.[100] So-called "pioneers" could successfully exploit the vast grasslands and they flooded across the prairies in the U.S. and Canada.[101] There are a number of problems that result from these practices: loss of topsoil from expanded use of equipment that disturbed the soil, and the appearance of pathogens that were devastating to crops that did not have genetic diversity. At the beginning of the technological advances in dealing with both plant and animals, it seemed that food production was increasing at a rapid rate and with it economic prosperity. The pressure to produce more food was tied to the fact that human populations were expanded at unprecedented levels around the world. In order to feed billions of new consumers, farmers and scientists turned to the search for greater productivity. At the core of this intensive farming was the discovery, and synthesis, of superphosphates. In the early nineteenth century this was

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[99] Gosden, Chris and Jon Hather, (eds). *Prehistory of Food Appetites for Change*. London: Routledge, 1999.
Pearson, Michael Parker. *Food, Culture and Identity in the Neolithic and Early Bronze Age*. Oxford: Archeopress, 2003.

[100] Kendall, Edward C. *John Deere's Steel Plow*. Washington DC.: Smithsonian Institution, 1959.

[101] Stannard, David E. *American Holocaust: The Conquest of the New World*. Oxford: University Press, 1992. gives a view of the impact of mass immigration and the results of farming practices. See also, Power, James and Rajendra Prasad. *Soil Fertility Management for Sustainable Agriculture*. Boca Raton: CRS Press, 1997. (339). For a more detailed description see Dick, Lyle. *Famers "Making Good": The Development of Abernathy District Saskatchewan, 1880-1920*. Calgary: University Press, 1989.

done through the application of natural fertilizers such as guano.[102] However, the manufacture of synthetic phosphorus in the nineteenth century began to change this practice, and in the wake of World War II, there was the development and application of synthetic nitrates. Industrial agriculture based mainly on mono-cropping became a dominant force promising a bountiful future of increasing productivity.[103] The problems that this type of farming has created are many and serious. The depletion of the fertility of the soil and the widespread use of chemicals to control unwanted plants and insects has reached a level that exposes the dangers of present methodology. There is a growing body of evidence to show that the current practices are not sustainable and the health of those who eat the plants and animals is endangered by the chemicals and pesticides that are being infused into the soil.[104]

While some of the disadvantages of mono-cropping are becoming increasingly known among scientists and consumers, the majority of arable land under production in the US is still under industrial production, according to the Union of Concerned Scientists.[105] The absence of crop rotation practices and extractive agro-economic policies that drive monoculture are exhaustive to soils both in terms of causing nutrient depletion and erosion, and in loading soils with pesticides and excess nitrates. As a

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[102] Gilmour, Rodney. *Phosphoric Acid: Purification, Uses, Technology, and Economics.* Boca Raton: CRC Press, 2014. (10).

[103] The heading of the magazine American Fertilizer (Philadelphia) provides a view of the fond belief in agricultural advances: "that man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

[104] Union of Concerned Scientists
http://www.ucsusa.org/food_and_agriculture/our-failing-food-system/industrial-agriculture/
(Viewed 10/27/13).
Kimbrell, Andrew. (ed). *Fatal Harvest: The Tragedy of Industrial Agriculture*. Washington DC.: Island Press, 2002.

[105] Pew Commission Report on the Environmental Impact of Industrial Farm Animal Production.
http://www.ncifap.org/_images/212-4_EnvImpact_tc_Final.pdf
(Viewed 10/28/13).

multiplier of biodiversity decline, mono-cultural practice also creates virtual food deserts for pollinators. Populations of monarch butterflies and bees have dropped sharply in recent decades. Overwintering populations of monarchs in Mexico have dropped an average of over 90% since 1995. According to Lincoln Brower, professor of biology at Sweet Briar College:

> Severe weather was working against the butterflies for the last two years. Another is the progressive deterioration of the overwintering habitat in Mexico due to illegal deforestation. But the third and probably the most egregious problem is the result of industrialized agriculture in the Midwest[106]

Honeybee populations have also declined sharply, in Europe by as much as 30% and in the US by 40% or more.[107] The crisis brought on by the loss of pollinators has led the European Commission to place a ban on certain pesticides. The immediacy of this problem is perhaps best seen in the almond groves of the Central Valley of California. The drop in the bee population has been dramatic with the arrival of a new syndrome known as "Colony Collapse Disorder."[108] In recent years nearly half of the bee colonies have been lost, and without them pollination of food crops is impossible. One solution for the almond growers is the importation of bees during the pollination season. However, this is a stop-gap procedure that does not address the cause for the loss of

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[106] Plumer, Brad. *Why Are the Monarch Butterflies Disappearing*?. Washington Post. December, 3, 2013. http://www.washingtonpost.com/blogs/wonkblog/wp/2013/12/03/why-are-the-monarch-butterflies-disappearing/ (Viewed 12/1/13).

[107] Delaplane, Keith S. and Daniel F. Mayer. *Crop Pollination by Bees*. New York: CABI Publishers, 2000.

[108] Jacobsen, Rowan. *Fruitless Fall: The Collapse of the Honey Bee and the Coming Agricultural Crisis*, New York: Bloomsbury, 2008.

colonies. Will it be possible in future years to have a sufficient stock of available bees to be moved from place to place as needed?[109]

We have experienced this first hand in our yard as the inability to keep bee hives from collapsing repeatedly since we began keeping them in 2010. Despite the fact that our neighborhood is rural and mostly cow fields, which are not generally pesticide intensive, we have lost three hives in three years due to "colony collapse disorder," which is being increasingly blamed on the use of nicotinoid pesticides, some of which are banned in Europe but are commonly used in the US.[110]

> While research is underway to determine the cause of Colony Collapse Disorder (CCD), pesticides have emerged as one of the prime suspects. Recent bans in Europe attest to the growing concerns surrounding pesticide use and honeybee decline.[111]

The implications of the loss of pollinators extend to soil issues. While resiliency loss may begin forcing more diverse growing practices (rotation), just as it is encouraging organic farmers to practice varying forms of poly-culture, reports are clear that further collapse of pollinators could prove devastating on global food supplies, and thereby potentially placing increased pressure on areas, which remain more viable.

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[109] Grossman, Elizabeth. Yale University. Environment 360. April 30, 2013. http://e360.yale.edu/feature/declining_bee_populations_pose_a_threat_to_global_agriculture/2645/ (Viewed 11/01/13).
[110] http://www.bayer-kills-bees.com/ (Viewed 12/01/13).
[111] http://www.beyondpesticides.org/pollinators/chemicals.php (Viewed 12/01/13).

Genetically Modified Crops (GMOs)

Commercial seed producers such as Pioneer and others have been trying to patent seeds based on selective breeding, hybridizing, and grafting since the early twentieth century. However, it was not until 1980, when *genetic modification* was achieved that the first patent was granted in 1980.

An example is the Bacillus Thuringiensis (Bt) toxin engineered corn that makes up the majority of that grown in the US, and is itself a registered insecticide.[112] Environmental Protection Agency guidelines have required farmers to plant a certain percentage of "refuge" (non-Bt) crops whose purpose is to provide gene-stock for pests so that they do not become resistant to Bt. Since Bt has been marketed and used to kill a wide variety of insects, scientists raise concerns about the likelihood that genetically engineered Bt would begin killing non-target insects. The EPA in turn required the biotech companies who manufacture Bt crops to test for hazards posed to monarch butterflies, caterpillars, and other insects known to be susceptible to Bt. Their finding was that "these insects do not generally inhabit corn, soy, and cotton growing regions, and that corn pollen is too heavy to be carried long distances by wind," hence the EPA found in 2001 that the regulation of these crops due to perceived hazards was "unnecessary."[113]

One of the disturbing reports comes from China where bionucleic acid (RNA) from genetically modified rice has been found in the organs of those who are ingesting

112 http://www.epa.gov/oppbppd1/biopesticides/pips/regofbtcrops.htm (Viewed 12/08/13).

113 EPA believed that the risk to monarchs and other nontarget butterflies was low. www.http://www.epa.gov/oppbppd1/biopesticides/pips/regofbtcrops.html (Viewed 12/08/13).

the grain.[114] The implications of this are serious for health issues since this RNA is involved in the liver cellular actions regarding cholesterol in blood. The research of cause and effect is complicated and hard to identify in terms of the range of possibilities involved in RNA. However, enough research has been performed to raise concerns about ties of micro RNA such as the type found in the Chinese research, to a range of diseases such as cancer, Alzheimer's, and diabetes. At least, we now know that the micro RNA can be stored in the body, with results that are not yet clear but are clearly warning signs. We are seeing that gene regulators are present in our diet and our organs. If we can understand how this operates it will provide a whole new field of study that will give us new ways of dealing with metabolic disorders.

According to independent studies by non-industry/EPA scientists, Bt corn that has been infused with a soil bacteria has the ability to kill insects by physically maiming the bodies. Just as in the rice studies in China , research shows that the genetic modified bacteria of Bt corn now shows up in the blood of 93 percent of pregnant women tested; 80 percent of babies; and 67 percent of non-pregnant women. In the case of soybeans, which have been modified to resist the effect of the herbicide Round Up, studies show that those who eat them have Roundup Ready bacteria present in their intestine. This new bacteria will be added to sweet corn in the future.[115]

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114 Leveaux, Ari. The Atlantic. January 9, 2012.
modified-foods/251051/.
Wiliamson, M. *Molecular Ecology*. Vol. 1,(May 1992.)
http://onlinelibrary.wiley.com/doi/10.1111/j.1365-294X.1992.tb00149.x/abstract (Viewed 12/13/13).

115 http://articles.mercola.com/sites/articles/archive/2011/10/06/dangerous-toxins-from-gmo-foods.aspx
http://www.theatlantic.com/health/archive/2012/01/the-very-real-danger-of-genetically- (Viewed 11/29/13).

According to the Institute For Responsible Technology:

> In 1992, the Food and Drug Administration claimed they had no information showing that GM foods were substantially different from conventionally grown foods. Therefore they are safe to eat, and absolutely no safety studies were required. But internal memos made public by a lawsuit reveal that their position was staged by political appointees who were under orders from the White House to promote GMOs. In addition, the FDA official in charge of creating this policy was Michael Taylor, the former attorney for Monsanto, the largest biotech company, and later their vice president. In reality, FDA scientists had repeatedly warned that GM foods can create unpredictable, hard-to-detect side effects, including allergies, toxins, new diseases, and nutritional problems. They urged long-term safety studies, but were ignored.[116]

An article in The Ecologist's 'Monsanto Files' by Jennifer Ferrara, the material under the title of "*Revolving Doors: Monsanto and the Regulators*" looked in detail at this issue. She has pointed out a close connection between Monsanto and officials in the FDA. Personnel from industry and government move back and forth between the two, implying significant conflict of interests. The arrival of bio-technology brought with it great potential benefits and also dangers. The United States governing groups focused on the benefits in writing laws and regulations that allowed for rapid development and commercialization. There was little concern for the possibilities of severe downsides as genetic engineers over rode the natural course of reproduction. Corporate research reports were often cited in government studies and the policing of regulations was mainly left to volunteer arrangements within industrial strategy. By the early part of the last decade of the twentieth century, these issues were beginning to be reported in the media.

[116] http://www.responsibletechnology.org/health-risks (Viewed 11/30/13).

Ferrara makes the further point that the cattle hormone rBGH which was being used in the United States but was banned in Canada and Europe. In the guidelines of the FDA, no difference was allowed to be reported between milk products that contained the hormone and those that were free of it. As she disclosed:

> In March 1994, Taylor was publicly exposed as a former lawyer for the Monsanto Corporation for seven years. While working for Monsanto, Taylor had prepared a memo for the company as to whether or not it would be constitutional for states to erect labeling laws concerning rBGH dairy products. In other words Taylor helped Monsanto figure out whether or not the corporation could sue states or companies that wanted to tell the public that their products were free of Monsanto's drug.[117]

Genetically modified crops, (both Bt and herbicide tolerant in combination) currently grown in the US are represented by the following numbers: corn, 85%, cotton 82%, soybeans 93%, sugar beets 95%.[118] While the cultivation of these as mono-crops may be implicated in the loss of pollinators, they are quantitatively responsible for the loss of biodiversity throughout large swaths of the United States.

There are dissenting voices regarding some of these issues. One of the current issues regards the so-called "Golden Rice" that has been genetically altered to include Vitamin A in the grain itself, rather than just the husks. There is strong support for

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[117] http://rense.com/general33/fd.htm (Viewed 12/01/13).

[118] http://www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-us/recent-trends-in-ge-adoption.aspx#.UshnzRxZC74
(Viewed 12/01/13).
http://www.greenamerica.org/pubs/greenamerican/articles/AprilMay2013/How-Monsantos-Sugar-Beets-Grew-Larger-Than-The-Law.cfm
(Viewed 12/01/13).

making this immediately available to places such as Bangladesh where Vitamin A deficiency can cause blindness.[119] The criticism is made that there are lost years because of over-regulation. However, if we look at the time and effort required for the production of something like vaccines and the years of testing, it seems inappropriate to advocate immediate release of one substance for ingestion while we feel it essential to have longevity studies for other items.[120] The medical profession does not see these years of study as "lost."

It is important to look back to the work of the European Commission and its report. There we find the crucial warning that studies are needed:

> ...including the identification of the attendant uncertainties of the likelihood and severity of adverse effects.[121]

Vandana Shiva has urged that rather than allowing Golden Rice with its attendant uncertainties, there should be a concerted effort to provide Vitamin A through other grains that are naturally occurring.[122]

Given the statistics on soil degradation and other growing environmental concerns, it is clear that proactive thinking and responses are becoming increasingly

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[119] Mew, T. W. et.al. (eds). *Rice Science: Innovations and Impact for Livelihood*. Manila: IRRI, 2003. (383).
[120] See the safeguards that control vaccine development in Eldrige, B. F. and J. Delmar. *Medical Entomology: A Textbook on Public Health and Veterinary Problems Caused by Anthropods*. Dordrecht: Kluwer Academic Publishers, 2004. (598).
[121] Ibid. This is the report from the European Commission (2000) Economic Impacts of Genetically Modified Crops on the Agri-food Sector.
[122] Shiva, Vandana. *Vitamin A Deficiency: Green Solutions vs Golden Rice*. New Delhi, 2002

critical. The need to understand how we as humans are dealing with the world around us is no longer just an interesting project, it has become a crucial task to address the wellbeing of current populations and ecosystems, and future generations. It is a multi-layered reality that confronts us and there are no easy and sure answers. Numerous, creative tactics and strategies are being brought to bear, and art practice is at least one way through which to consider the "transformations" that can lead to greater resilience.

Chapter Four

Soils and Interventions

Soils and Ecology

For as long as agricultural societies have experienced the observable effects of soil degradation, such as crop failure and erosion, there have been questions about the causes and about potential solutions. Often the loss of viable soil has resulted in the displacement of human and other populations, and with it "the erosion of civilizations" in David Montgomery's words.[123] As he points out, the loss and degradation of soil has been a primary, or at least an indirect cause of the collapse of most major civilizations in history such as Mesopotamia, Ancient Greece, Roman Empire, China, European colonialism, and some societies in Central America.

Historically there has been a tendency in many cultures to connect soil fertility, crop yield, and rain patterns with relationships between humans and deities. This is demonstrated by ritual practices related to agriculture, other than those of direct practical application, such as planting according to lunar cycles etc. Supplications and offerings to deities of fertility at planting and harvest times are deeply ingrained in numerous cultures throughout the world.[124] The range and ramifications of these practices exceed the scope of this dissertation, but are mentioned in contrast to practices resulting from systemic observations of the effects of agricultural practice with regard to environmental conditions. The questioning of causes of soil decline over millennia based on looking at

123 David Montgomery, Dirt (The Erosion of Civilizations). (Berkeley: U.C. Press, 2007).
124 For a brief description Migene Gonzales-Wippler "Fertility Ritual" Complete Book of Spells, Ceremonies, Magic (Llewellyen, 2002), 259.

cause and effect has coalesced into what is currently considered to be *ecology*. This is defined as "the scientific studies of interactions between individual organisms and their environments, including interactions with both conspecifics and members of other species."[125]

It should be noted that scientific ecology and *conservationism* began to develop more or less concurrently during the late middle-ages, but they are not necessarily identical. Conservationism, as *advocacy for environmental protection*, and various related practices, has benefitted from scientific discoveries, and there has been considerable crossover.[126] It may not be possible to identify a particular origin for the conservationist systems of thought that have evolved into contemporary environmentalism (the ecology *movement*). In its early phases in the late 19th and early 20th centuries, a considerable amount of its impetus was aesthetic and concerned with the protection of "natural beauty." One legacy of this practice is that some wilderness areas have been set aside for protection based on their visual appeal, which were not necessarily the most critical habitat areas in their states or regions.

125 From the definition of ecology in the Stanford Encyclopedia of Philosophy. http://plato.stanford.edu/entries/ecology/ (Accessed October, 2013).
126 Issues of this type discussed by Donald Gibson Environmentalism: Ideology and Power. (New York:Nova, 2002). 29.

> "The users and owners of the national forests continue to express a strong interest in maintaining the character of forest and grassland settings. These settings provide special places for recreation and visual amenities. Alfred Runte stated in a book called The National Forest Idea (published in 1991) "There is no question...that the national forests are major contributors to an American sense of place, to an identity with landscape that transcends economics for its own sake. The founders of the national forest idea...were consistent in their advocacy for landscape aesthetics. The forests not only should be functional, they should be beautiful as well." [127]

With regard to soils, systematic observations and experimental practices in agriculture go back at least as far as identified precursors to the scientific revolution in the middle ages.[128] Examples of shifted practices during that era include advances in irrigation based on studying Arabian methods from antiquity, cross-plowing, and greater avoidance of fallowing. However, it was not until and 19th and 20th centuries that key concepts such as evolution and complex bio-diversity within what are currently considered ecosystems and "the environment" arose. The term "ecology" ("okologie") from the Greek "ekologia" (the study of a dwelling place), was coined by the German zoologist Ernst Haeckel in the mid 19th century.[129] Along with general advances in the sciences during that time, it developed into a rigorous science associated with evolutionary biology, botany, zoology, and environmental chemistry. The development of pedology as a natural science is credited to Vasily Dokuchaev's work in Russia in the

[127] US Forest Service Landscape Aesthetics Handbook 1991 (Accessed November, 2013) www.fs.fed.us/cdt/carrying_capacity/landscape_aesthetics_handbook_701_no_append.pdf

[128] Gabriel Alonso de Herrera. *Ancient Agriculture (*from *The Book of Agriculture*, 1530). Layton, Utah. Ancient City Press. 2006.

[129] V. Dokuchaev, *Generelle Morphologie der Organismen : allgemeine Grundzüge der organischen Formen-Wissenschaft, mechanisch begründet durch die von C. Darwin reformirte Decendenz-Theorie.* (1866) Berlin. See also *Acta Universitatis Lodziensis: Folia philosophica* - Volume 10 - Page 61

late 19th century.[130] Prior to Dokuchaev's writings, soil had been mostly considered a "dead" material weathered physically and chemically from bedrock, from which plants could obtain mineral nutrients.

> "The scientific basis of soil science as a natural science was established by the classical works of Dokuchaev. Previously, soil had been considered a product of physicochemical transformations of rocks, a dead substrate from which plants derive nutritious mineral elements. Soil and bedrock were in fact equated. Dokuchaev considers the soil as a natural body having its own genesis and its own history of development, a body with complex and multiform processes taking place within it. The soil is considered as different from bedrock. The latter becomes soil under the influence of a series of soil-formation factors (climate, vegetation, parent material, relief and age). According to him, soil should be called the "daily" or outward horizons of rocks regardless of the type; they are changed naturally by the common effect of water, air and various kinds of living and dead organisms." [131]

Scientific ecology is concerned with studying distributions and conditions of organisms in a given environment, successions of species over time, life processes, and the interactions, interconnections, and interdependencies of life forms with other living and non-living materials. It is also concerned with human impacts and interrelations with environmental factors, which apply to agriculture, resource management, urban planning, and conservation. Some view "ecology" as the umbrella term for the family of ecological sciences and distinguish it from "environmentalist" philosophies. The Stanford

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[130] V. Dokuchaev, *Moscow Soil Science Bulletin* (Accessed November, 2013) http://www.springer.com/?SGWID=0-102-24-0-0&searchType=EASY_CDA&queryText=dokuchaev&x=16&y=5

131 Vasily V. Dokuchaev 1846-1903, (Accessed August, 2013) http://people.wku.edu/charles.smith/chronob/DOKU1846.htm

Encyclopedia defines ecological philosophy as a "sub-field" that seeks to address relations between diversity and stability, model building strategies, and debates over differing degrees of reductionism and determinism.[132] Others, such as Lockwood and Reiners, writing on the philosophical origins of the study of ecology, refer to ecology in a broader sense, which includes various philosophical schools of thought associated with "environmentalism."[133]

For the sake of clarity in this dissertation I will generally distinguish between the philosophical ideologies of environmentalism and conservation, and the seeking of quantifiable environmental data in "strictly" scientific contexts. It should be noted however that there are significant overlaps to be found in data driven conservation groups such as the Natural Resource Defense Council, and in scientific experiments undertaken on behalf of conservationist causes.[134] This chapter describes a few notable, pivotal examples in the development of environmentalism during the last two centuries, as well as describing a range of 'best practices' that that are being brought to bear in the face of mounting environmental degradation. The chapter will also describe some of the ways that art practice has been influenced by environmental movements, and, in turn, contributed to them.

"Environmentalism" is generally associated with "the ecology *movement*," that is a social movement of activists, scientists, and sympathizers who seek to inform, educate,

132 From the definition of "Ecology" in the Stanford Encyclopedia of Philosophy. http://plato.stanford.edu/entries/ecology/
133 Jeffrey Lockwood, William Reiners. *Philosophical Foundations for the Practices of Ecology*. Cambridge. 2010.
134 Natural Resource Defense Council http://www.nrdc.org/ (Accessed October, 2013)

and impact society in ways that will lead to more conservationist thinking and behavior. Like scientific ecology, it has precursors that predate a clearly identifiable origin, however the beginning of the 20th century marks a period of particular importance. Among the most notable and influential early environmental thinkers of this time were Rudolf Steiner and Goethe in Europe, Whitman and Thoreau, John Muir, Rosalie Edge, and Aldo Leopold in America.[135]

The emergence of scientific ecology is often credited to Charles Darwin and the formation of the theory of evolution, as the basis of modern biology.[136] As ecology, zoology, biology, and chemistry developed in tandem, there were many scientist involved, both directly and indirectly, in the discoveries that have led to the formation of ecology as a systematic study of dynamic, eco-systemic interactions between plants, animals, and minerals. Alexander Von Humboldt, for example, whose cataloguing of a vast number of new plant species during voyages to South America in the late eighteenth century is considered to have revolutionized the field of botany.[137]

135 From the Pajarito Environmental Education Center Ecology Hall of Fame http://ecotopia.org/ecology-hall-of-fame/ . (Accessed November, 2013)
National Wildlife Federation Conservation Hall of Fame http://www.nwf.org/Who-We-Are/History-and-Heritage/Conservation-Hall-of-Fame.aspx (Accessed November, 2013).
136 Michael Ruse, Charles Darwin (Oxford : Blackwell, 2008).
137 See the description in Gerard Helferich *Humbolt's Cosmos: Alexander von Humbolt and the Latin American Journey that Changed the Way We See the World*. (New York : Gotham, 2004).

Ecological Succession

"Ecological succession" is among the early, systematic observations of the process of changes in the structure, layering, and biodiversity of an ecosystem through time. It is based on the observation of progressive emergence of species in a newly formed, or significantly disturbed, habitat, beginning with a fairly small number of pioneer species (plants), and developing into a stable "climax community." [138] The term *succession* was first used to describe the processes of emergent layers of vegetation in disturbed environments in the early 19th Century by Adolphe Durea de la Malle, based on his observations of clear cutting in forests.[139] Thoreau also referred to it in an 1859 address titled "The succession of Forest Trees."[140]

Ecological succession takes two main forms: *primary succession*, which describes the emergence of species in newly formed habitats such as near total coverage of an area by mud or lava, and *secondary succession* in the wake of disturbances in an existing environment. Primary succession may describe very slow processes such as the formation of soils, and subsequent vegetation, out of silt and lichen behind receding glaciers. Secondary succession behind logging or small forest fires may establish a temporarily stable ecosystem within a few years. The study of succession was formalized by Henry Chandler Cowles in a paper titled *The ecological relations of the vegetation of*

[138] Charles Krebs. *The Ecological World View*. (Berkeley : University of California Press, 2008), 233.
[139] Adolphe Durea de la Malle *European Origins of Scientific Ecology* (1800-1901), Pascal Acot, editor. (Amsterdam : OPA, 1998). xxxv.
[140] Published version appeared in Henry David Thoreau and Ralph Waldo Emerson, *Succession of Forest Trees and Wild Apples*, (Cambridge: Thicknor & Fields), 1863.

the sand dunes of Lake Michigan in 1899.[141] Central to this study was the idea of a "sere," a predictable sequence of species emergence based on the biological and physical factors of a given environment.

The idea of predictable succession was amplified by Frederic Clements,[142] a contemporary of Cowles, who viewed successive emergence as being highly deterministic. Clements compared the ecological emergence of species types with the development of individual organisms, and his views remained influential until the 1960's.[143] However, these views were challenged from the 1920's onward, most notably by Henry Gleason who saw successive emergence as being too complex to be described by deterministic models, and much more predicated on chance.[144] Despite the fact that his interpretation was closer to that of Cowles, his 1926 publication was largely ignored until thirty years later when more data-driven models emerged.[145]

Currently the notion of stable "climax communities" has faded, and there is more of an acknowledgement of the complexities that influence species vectors and alternating scenarios. In part, this is because of the frequency at which ecosystems tend to

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[141] Henry Chandler Cowles. "The ecological relations of the vegetation of the sand dunes of Lake Michigan" *Botanical Gazette* 27 (1899). 95-117.
[142] Frederic E. Clements, *Plant Succession: an Analysis of the Re-development of Vegetation.* (Washington : Carneige Institution,1916).
[143] Ronald C Tobey, *Saving the Prairies: The Life Cycle of the Founding School of American Plant Ecology, 1895-1955.* (Berkeley: University of California Press, 1981).
[144] See the work of Paul Keddy, *Plants and Vegetation: Origins, Processes, Consequences*. (London: Cambridge University Press, 2007)485 for an explanation of the debate.
[145] Henry Gleason "The Individualistic Concept of the Plant Association". *Bulletin of the Torrey Botanical Club* 53 (1926)7-26.

experience disturbances of one kind or another from unpredictable sources. Furthermore, contemporary ecologists tend to acknowledge that climate change renders "climax" conditions either unlikely or not useful in predicting emerging ecological outcomes in the long run. None the less, there remains a certain degree of predictability with regard to re-forestation given favorable circumstances, or lack thereof if deleterious conditions persist.

Among the areas in which ecological succession has intersected with my practice-based research is with regard to sowing and encouraging *native plants*. Use of natives is a dynamic subject in ecology for a wide variety of reasons, including that they are naturally drought and 'pest' resistant, often beneficial to pollinators, and may be helpful in mitigating the impacts of invasive species.[146] It has also lead to some research on the processes by which plants 'adjust' soils to suit themselves in concert with mycelial and microbial interactions. An example can be seen in the efforts of the Native Plant Society of California to rid the hillsides of Marin County of invasive scotch broom. While these have been partially successful, there was also a tendency for rebound, and for native varieties to find the soil less compatible than during pre-invasion years.

[146] A growing literature on this situation includes: David Richardson, *Fifty Years of Invasive Ecology: The legacy of Charles Elton*, (Oxford : Blackwell, 2011) and Pat Wilmer, *Pollination and Floral ecology* (Princeton University Press, 2011)630.

Bio-Dynamic Agriculture

Bio-dynamics describes a range of practices in organic farming and horticulture developed by Rudolf Steiner in the early 20th century.[147] Bio-dynamics is based on the idea of treating soil fertility, vegetation, and livestock integration as being within a single, holistic system, where all components are seen as ecologically interrelated. Many have carried forward to the present day, despite significant controversy over the 'spiritually scientific' aspects of its practices that were central for Steiner. According to Demeter International, the principle agency for biodynamic certification, there are nearly 150,000 hectares in 47 countries around the world currently under biodynamic production.[148]

The biodynamic movement began with Steiner's eight part lecture series in 1924, credited as being the first of their kind given on organic agriculture, although the term was coined sixteen years later.[149] Steiner prepared the lectures in response to farmers who were complaining of soil exhaustion, diminished crop yield, and the declining health of their livestock. Some pointed to the over-use of chemical fertilizers such as super-phosphates, manufactured in concentrated forms since John Bennet Lawes discovered that phosphates usable to plants could be increased by adding sulfuric acid to manure and

[147] His lectures were translated in several volumes. Rudolf Steiner, *Agriculture Course: The Birth of Biodynamics Method*. (Great Barrington : SteinerBooks, 2011). Also see his *What is Biodynamics?* Published in 2005 by the same press.
[148] See the reference in Raul Lejano, Mrill Ingram, Helen Ingram *The Power of the Narrative in Environmental Networks*, (Boston : MIT Press, 2013)154.
[149] The use of the term is found in Lord Northbourne *Look to the Land*. (London : J.M. Dent & Sons, 1940)45.

bone-meal in the 1840's.[150] According to Steiner, the methods that he prescribed should be treated as experimental and tested through practice. Together with agronomist Erhard Bartsch, he formed the Association for Research in *Anthroposophical Agriculture* (which continued, under a different name until it was eliminated by the National Socialists), and the journal *Demeter*, which continues to the present.[151] By the early 1930's the association had over four hundred members, mostly in Germany and Switzerland, and a few outside of Europe.

In 1938 *Bio-Dynamic Farming and Gardening* was published by Ehrenfried Pfeiffer, which was translated in five languages, and became one of the primary sources for practice in Europe.[152] Two years later Betteshanger published a manifesto on bio-dynamics inspired agriculture titled *Look to the Land*, in which he coined the term 'organic farming', crediting Steiner for its methodology. In the 1950's Hans Mueller in Switzerland established an 'organic-biological' farming method, inspired by Steiner,

[150] A full story of this is found in G.J. Leigh's *The World's Greatest Fix: A History of Nitrogen and Agriculture* Oxford University Press, 2004 p 108 ff. For the work of Justus von Liebig, *Letters on Modern Agriculture* edited by John Blyth. (London : Bradbury & Evans, 1859)62.
[151] Continuing work of this type is reported in *World of organic agriculture: statistics and emerging trends.* Helga Willer, Minou Yusefi, Neil Sorensen. (Bonn : IFOAM, 2008) 124. A more historical record is found in *Anthroposophen in der Zeit des Nationalsozialismus (1933-1945).* Uwe Werner. (Munich, 1999)82.
[152] This work has appeared in a second edition Ehrenfried Pfeiffer, *Soil Fertility, Renewal, & Preservation: Bio-dynamic Farming and Gardening* (East Grinstead : Lanthorn Press. 2004).

which developed into *Bioland*, a major certifier of organic products that continues to the present.[153]

Early Examples and Precursors of Conservationism

Examples of conservation and environmental legislation date back at least as far as the fourteenth century, largely driven by the nuisance of filth in growing cities such as London and Paris. Both cities passed laws about butcher shops throwing discarded animal parts directly into the street during this time.[154]

Isaak Walton's *Compleat Angler,* published in 1653, mentions conservation and stewardship of resources in contrast to overfishing, which had been observed in some streams.[155] Deforestation had already become an observed problem in some areas of Europe when Gabriel Alonso de Herrera wrote the *Book of Agriculture* in 1530.

In 1671 South Carolina passed a law about polluting waterways, which is still in effect.

> "Should any person cause to flow into or be cast into any of the creeks, streams or inland waters of

[153] A discussion is found in *Nature Matrix: "Linking Agriculture, Conservation, and Food Sovereignty"* by Agnes Wright, Ivette Perfecto, John Vandermeer. (London : Earthscan, 2009).
[154] A detailed study is in the reprint of the writings of *Edwin Chadwick: Nineteenth Century Social Reform,* (London : Routledge, 1997).
[155] For detail on the publication of this work see *A Bibliogaphy of "The Complete Angler" of Izaak Walton & Charles Cotton* compiled by Arnold Wood, (New York : C. Scribner's Sons, 1900).

> this State any impurities that are poisonous to fish or destructive to their spawn, such person shall, upon conviction, be punished." [156]

John Muir and the Sierra Club

In 1892 Muir and a group of supporters founded the Sierra Club as a conservationist organization, which continues to this day, and has been a continually active and vocal group throughout the twentieth century.[157] Muir is described by the author Lawrence Clark Powel as "America's most famous and influential conservationist," and his writings helped inspire the preservation of numerous large areas of wilderness throughout the US, including Yosemite, Sequoia, Rainier, and Grand Canyon National Parks.[158]

Activists describe Muir's role more bluntly,

> "If you think about all the gains our society has made, from independence to now, it wasn't government. It was activism. People think, 'Oh, Teddy Roosevelt established Yosemite National Park, what a great president.' BS. It was John Muir who invited Roosevelt out and then convinced him to ditch his security and go camping. It was Muir, an activist, a single person." [159]

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[156] See the code number 772 with first date of 1671 in *Code of Laws of South Carolina* vol. 2 1912, p 419.
[157] http://www.sierraclub.org/john_muir_exhibit/about/ (Accessed August, 2013).
[158] *Many Californias: Literature from the Golden State* edited by Gerard W. Haslam. 2nd Edition (University of Nevada Press, 1999)118.
[159] Yvon Chouinard, Patagonia Founder in http://www.sierraclub.org/sierra/200403/interview.asp

In 1908 Theodore Roosevelt called together the National Conference of Governors at the White House to consider issues related to natural resources. Roosevelt stated that, "the conservation of natural resources is the most weighty question now before the people of the United States."[160] It was recommended during the conference that a National Conservation Commission be appointed to advise the president on natural resources issues. The first Forest Service experiment station was established in 1908 at Fort Valley in the Coconino National Forest in Arizona.[161] Additional research stations were soon created in California, Colorado, Idaho, Utah, and Washington. The Forest Service initiated studies in 1915 to measure runoff and erosion from small plots on forest areas in Utah.[162]

Dry Farming

Dry farming, or *dry land farming*, refers to agriculture and horticulture practiced without external irrigation.[163] It is distinguished from rain-fed agriculture, which is practiced during wet seasons, by its use of residual moisture from wet periods during times of little or no rainfall, or in regions that experience little precipitation. Dry farming

[160] See the description of this event in the Library of Congress American Memory project http://lcweb4.loc.gov/cgi-bin/query/r?ammem/consrv:@field(DOCID+@lit(amrvgvg16div19))

[161] Gerard W. Williams, *The Forest Service: Fighting for Public Lands*, (Westport : Greenwood Press, 2007)14.

[162] www.ars.usda.gov/SP2UserFiles/ad_hoc/36021500WEPP/Gilley_Flanagan_2007a.pdf (Accessed July 2013).

[163] An early but still valuable study is the work of John Widtsoe, *Dry Farming: A system of agriculture for countries under a low rainfall*, (New York : Macmillan, 1920) See Dry land farming studies at West Texas A&M University, Dryland Agricultural Institute. http://www.wtamu.edu/academics/dryland-agriculture-institute.aspx (Accessed July 2013).

is an ancient soil tillage technique common throughout the Mediterranean (and similar climates worldwide) that works best in regions with twenty inches or more of rain per year, and uses a variety of surface coverage techniques and drought resistant crops. It usually involves turning the soil at the beginning of the dry season to create a sponge-like consistency that draws moisture up from below. Following this, the soil is rolled flat so that the top layer seals as a limited, natural moisture barrier. According to the California Agricultural Water Stewardship Initiative, there are five main elements, cited specifically in the case of wine grapes. They use Frog's Leap Winery in Napa County, California as the primary case study, though the principles described can apply to other crops as well.

> "Believing that deeply rooted vines produce grapes with greater balanced flavors that are also reflective of the land, Frog's Leap currently dry farms over 200 acres of certified organic vineyards. As a secondary benefit, the water-saving benefits of dry-farming fit into our goals to be a sustainable business. The success of dry-farming relies heavily on the farmer's working of the soil through planting of cover crops and tillage throughout the growing season. This promotes an environment that increases the soil's capacity to hold water and at the same time encourages a healthy, balanced and complex biological life in the soil's structure. This "reservoir" of water and nutrients encourages deeply rooted vines, which in turn are stronger and more disease resistant".[164]

1.) The soil must be suitable, with sufficient water-holding characteristics for the type of crop being grown. Crops grown in extremely dry conditions would have to be more self-reliant with regard to water conservation, such as succulents.

[164] http://www.thewinecompany.net/frogs-leap-part-three-dry-farming-and-alcohol-levels/ (Accessed August, 2013). http://www.frogsleap.com/html/beinggreen_dryfarming.html

2.) Plants must be sufficiently spaced to allow individuals to draw the moisture that they need.

3.) Most plants must have sufficient rooting ability to seek moisture from the soil. Depending on the type of roots plants put down, perennials may need some irrigation while establishing sufficient taproots. Desert plants constitute some exception to these conventions, but their yield is not generally considered sufficient for them to be part of the mainstream discussion.

4.) Soil needs to be cultivated as soon as the rains stop, usually by tilling and then rolling to create a misnamed "dust mulch" on the surface. Dust mulch is a three or four-inch layer of dry, semi-packed soil that seals over lower layers and helps prevent evaporation. While annual tillage and disking are common, there are farms in Northern California and elsewhere that till only once in three to six years. Other methods include rotation of dry and irrigated portions of the farms, or rotations of dry and no till portions.

5.) *Harrowing* is a common feature of dry farming, used anywhere from once a season to as often as weekly. Harrows are sharp implements dragged over the soil in between crop rows to turn, aerate, and smooth the surface by breaking up dirt clods. It is distinguished from *plowing* by being shallower in depth. The California Agricultural Water Stewardship Initiative refers to harrowing as *cultivation*, but many farmers distinguish

cultivators as being finer implements for weed abatement only, whereas harrows disturb the entire surface of the soil.

Harrowing is described by the CAWSI as being used "religiously" by dry farmers, despite the fact that it is controversial among soil scientists and environmentalists. [165] The principles behind harrowing and cultivation are even the subject of an Aesop fable titled *The Farmer and His Sons*.

> A father, being on his deathbed, wished to be sure that his sons would give the same attention to the farm as he had given it. So, he called them to his bedside and told them that he had buried a great treasure in one of the vineyards. After his death, the sons took spades and shovels and dug carefully over every portion of the land. They found no treasure, but the vines repaid their labor with extraordinary abundance.[166]

Dry farming in California was a much more wide spread practice in the past prior to extensive, engine-driven irrigation, and mega-irrigation projects such as the Central Valley Project (California Central Valley Canal, 1937 to present).[167] Thus, according to the CAWSI, it has potential to be brought back into far greater use in the future.

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[165] agwaterstewards.org/index.php/practices/dry_farming/ (Accessed August, 2013).
[166] *Aesop's Fables* Collector's Library edition. CRW: London, 2006. P 64.
[167] A description of the earlier history is found in Robert W. de Roos, *The Thirsty Land: The Story of the Central Valley Project*. (Palo Alto : Stanford University Press: 1948). More recent thoughts on the project are in Carolyn Merchant, *Green versus Gold: Sources in California's Environmental History* (Washington D.C. : Island Press 1998). See also: United States Department of the Interior, Bureau of Reclamation. http://www.usbr.gov/mp/cvp/

Dry farming may be problematic with regard to a number of issues, however, especially with harrowing. It was interesting to see John Peterson (*The Real Dirt on Farmer John*) discussing Steiner's view of the farm as "a person" (a living body), while sitting atop a tractor and spade-harrowing the land.[168] Maximizing crop yield seemed necessary for him to try to keep his farm solvent, but in the end none of his efforts to care for the land kept his soil from becoming exhausted. Lowered crop yield is, itself, one of the potential obstacles to the implementation of dry farming, but not the most significant from the standpoint of ecology.[169] Some of these issues are described by the following: [170]

1.) Most plants need a minimum of fifty square feet of clearance in order for them to get the residual moisture they need. Many, if not most existing perennial crops, such as grape vines and fruit trees, are already planted too close together in order for sufficient water intake for individual plants. Thus, converting even to modified dry farming, many existing crops would have to be culled significantly.

2.) Existing perennial crops which have been irrigated have generally been able to rely on shallower root systems, and have not put down the deeper roots associated with dry-

[168] The film also demonstrated that even with the best of intentions and the employment of a range of best practices (including CSA), that industrial organic agriculture can exhaust soils. See the video www.filmfanatic.com/ John Peteron *The Real Dirt on Farmer John.* Collective Eye. 2005. A discussion of his failure is found at www.pbs.org/independentlens/realdirt/talkback.html

[169] A different position reflecting the policy of the federal government is offered from the National Academy of Sciences in the publication *A New Era for Irrigation*, 1996.

[170] California Agricultural Water Stewardship Initiative http://agwaterstewards.org/index.php/practices/dry_farming/

raised plants. Conversion is considered potentially difficult for this reason, although Leeds claims to have done it with great success.[171]

3.) The loss of yield following conversion to dry farming may be significant. Some farmers report yield losses of up to sixty or seventy percent, depending on the crop, however, Frank Leeds reports being able to keep his vineyard yields at equivalent to expectations for high-end grapes. Others who grow near riverbeds and riparian areas report keeping yields abundant.

4.) Market conditions may work for, or against, dry farming in some scenarios. Dry farmed produce is sweeter and denser than most of that which is irrigated, and often fetches far higher prices. It is more durable, travels better, stores longer, and may have more nutritional density than its irrigated counterparts. However, the grocery industry has spent decades (and uncountable amounts of money) on marketing large, picturesque, and blemish free produce. Stores sell produce by the pound, and tend to demand large varieties, which bring higher profits at the cash register. Creating a marketing balance for quality versus quantity and appearance is underway among purveyors of natural and organic produce, but will call for some significant policy shifts among grocery manufactures associations. The current battle over labeling of *genetically modified* ingredients in the U.S. is one example of fierce resistance to such changes.[172]

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[171] See Frank Leeds comments in *Wine & Spirits* Winestate Publications. 2008

[172] See Grocery Manufacturers Association http://www.gmaonline.org/ and http://factsaboutgmos.org/. "The GMA was lobbied vigorously against efforts to test for the safety of genetically modified organisms, to limit their use, or label products that contain them. They were recently found to be in violation of Washington State campaign finance law for their non-disclosure of the sources of large contributions given towards attempting to defeat a ballot initiative (Proposition 522) for labeling of GMO's by bio-tech companies and other political donors."

From ecological perspectives, some of the benefits of diminished water use and avoidance of soil salinization (and broad spectrum exhaustion) associated with irrigation should be deemed as being of equal weight with economic considerations (as with Elkington's 'triple bottom line', for starters).[173] Indeed, from permacultural or otherwise holistic perspectives, the *economics* (appraisals of "cost" vs. return) of agricultural or horticultural practices are inseparable from considerations of the health of the soil. However, economic viability is part of what keeps farms from falling fallow or being forced to sell out. Fields in disuse avoid some ecological pitfalls while potentially becoming susceptible to other forms of erosion (gullies, for example), depending on the regional climate. Those farms that are forced to sell due to lack of sufficient profit tend to be bought by larger firms who follow industrial versus sustainable agricultural models. Thus, those who wish to attempt dry farming conversion may have to balance water conservation ideals with financial realities, or come up with increasingly creative ways to protect the viability of their farms.

5.) Dry farming may pose moderate to extreme erosion risks to soils. Especially on hillsides where many traditional dry crops such as grapes and olives are grown, fallow, cultivated soils are highly susceptible to erosion by rains that may come late in the season after the land has been tilled. Despite the compaction of dust mulch layers at the surface, there still remains a tendency for some rain and wind erosion to occur. Fallowing and

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Gilliam, Carey. Reuters. October 16, 2013.
http://www.reuters.com/article/2013/10/16/us-usa-gmo-labeling-idUSBRE99F19B20131016

[173] John Elkington. From Triple Bottom Line to Zero.
http://www.johnelkington.com/activities/ideas.asp (Accessed November, 2013).

frequent tillage during dry seasons leaves the soil surface continually susceptible to wind erosion. Dry farming in tenuous areas such as the American west or near the Sahara regions of Africa have resulted in devastating dust and sand storms, with those of the Sahara having worsened significantly in the last fifty years.[174]

Cover crops and additional mulching thus become extremely important elements of dry farming. There are also other erosion abatement methods credited with success, such as *cross-furrowing*, an ancient practice of tilling perpendicular to prevailing winds, and perpendicular to slope angles. Wind barriers may also be used where feasible.

6.) Dry farmed crops, orchards, and vineyards are slower to develop than irrigated versions. A dry-raised vineyard may take as much as five years to begin producing fruit on par with an irrigated crop.

7.) Another factor in considering the potential complications of dry farming is that constant tilling can nullify soil's carbon sequestration ability. The aeration process that creates the upward sponging action of topsoil also releases stored carbon and other greenhouse gases especially if fertilizers and pesticides are used. Methane from manure and nitrous oxide from synthetic fertilizers are both more potent greenhouse gases than carbon dioxide in contributing to climate change.[175]

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[174] A.S. Goudie, *Arid and Semi-Arid Geomorphology*. Cambridge University Press, 2013.

[175] Environmental Protection Agency. Climate Change Overview. http://epa.gov/climatechange/ghgemissions/gases/ch4.html

Thus, a preferable approach to dry farming may be in combination with no-till agriculture to as great an extent as possible, or using it in combination with rotational irrigation in order to minimize the amount of harrowing and disking that regional climates generally call for. Mulching is critical to erosion abatement and can be done through a variety of means, such as adding loose organic material or even cardboard to exposed ground. This process aids dust mulch layers in containing moisture, sometimes to a greater extent.

Cover crops also are of great importance with regard to the potential pitfalls of dry farming, as they hold soil to as a great or greater a degree as mulching, given that they cover the surface and also put down roots. Like mulching, cover crops contribute beneficial material to soils, but deposit them deeper in the soil as they push roots down and then die, leaving the roots and top-cover for compost.

Cross-furrowing is also an important consideration in any erosion abatement effort, but especially so in dry farming where the effects of erosion can be drastically compounded by excessive surface disturbance and lack of moisture to stabilize the surface.

No Till Farming

No till is also referred to as *zero till* or *direct planting*. It is the practice of planting crop seeds without plowing or harrowing, thus avoiding exposure of fallow,

'raw' soil to wind and rain. No till may have been part of the earliest forms of plant domestication and intentional seeding, and, in modern times, was introduced by Edward Faulkner in the 1940's.[176] No till has numerous potential benefits for soils, the organic life within them, water bodies, and the atmosphere as well. No till practice has marked differences with conventional agricultural cultivation and thus also presents potential challenges to those attempting it on a commercial or large scale.

No till farming is being adopted by organic and permacultural farms around the world, and is being used with great success by farms and vineyards in Northern California.[177] There are advocates of tilling, however, such as Julia Cooper at Newcastle University, UK, who point out that tillage stimulates decomposition of organic matter, aerates the soil, and increases availability of some nutrients for plants.[178] She participated in a study that found that minimal or no tilling methods do not have a large-scale effect on soil's carbon sequestration ability.[179] However, the European Space Agency, in its study of sequestration and soil albedo found that the act of plowing releases greenhouse gases at the time of plowing.[180]

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[176] Edward Faulkner *Plowman's Folly* (New York : Grosset & Dunlap, 1943).
[177] http://ucdavismagazine.ucdavis.edu/issues/win06/feature_3.html (Accessed December, 2013)
[178] Orr CH, Leifert C, Cummings SP, Cooper JM. "Impacts of Organic and Conventional Crop Management on Diversity and Activity of Free-Living Nitrogen Fixing Bacteria and Total Bacteria Are Subsidiary to Temporal Effects." *PLoS One* 2012, **7**(12). See her information at http://www.ncl.ac.uk/afrd/staff/profile/julia.cooper
[179] UK Soil Association www.soilassociation.org/LinkClick.aspx?fileticket=SSnOCMoqrXs%3D&tabid=387 (Accessed November, 2013.)
[180] *www.esa.int/Our_Activities/Observing.../Reflecting_on_Earth_s_albedo* (Accessed November, 2013).

Erosion abatement

One of the primary benefits of no till farming for soil is the greatly diminished erosion of topsoil due to what is left in place during and in between growing seasons. Non-tilled land may acquire a layer of dust mulch from being trampled. Roots supporting cover crops, and those left by cover plants that have died, hold soils in place. Dead root material serves to stabilize soils while building them as the roots decay. As cover crops die and fall they create mulch layers and compost for the soil while protecting it from direct contact with wind and raindrops. Land that is in transition from conventional agriculture to no-till may go through a phase of comparatively poor drainage, but this often abates as gophers, moles, earthworms, and root channels from annual plants create pores in the top layers.

Moisture retention

The mulching and composting action of living and fallen cover crops retains moisture to a significant degree by facilitating condensation and minimizing evaporation. The adding of additional mulch layers with various materials such as wood chips, cardboard, or compost in combination with cover crops, can increase the moisture retention in soil dramatically. Moisture retention reduces the need for irrigation, and with that, it reduces some of the associated problems such as fossil fuel expenditures, aquifer and waterway depletion, and salinization of soils. As the practice of combining no till

and dry farming increases, this moisture retention gains further importance.[181] As we have found in our own garden during the hottest months of summer, the adding of robust mulch layers, especially cardboard, can reduce watering needs by nearly 50%. Moisture retention has the additional benefit of attracting earthworms and other fauna, and promoting general organic content, including beneficial mycelium networks.

Increased bio-diversity

Cessation of plowing and harrowing allows the biodiversity of soil to increase. The moisture retention under cover crops and compost layers attracts all manner of macro and micro fauna whose interactions further add to the organic content of the soil. Avoiding the displacement of these biotic intersections and communities that can result from plowing allows them to build in breadth and complexity, and to build soil in the process. The crop rotation and poly-culture often practiced as a part of no till farming further adds to biodiversity through the presence of differing plant characteristics and their root systems, and the range of fauna that they attract.

Potentially increased crop yield and quality

The increased biodiversity of soils generally increases the nutrients available to plants, and thus, potentially, can increase their fecundity, nutritional value, and flavor. While dry farming by itself has a tendency to decrease the yield of most crops, no till increases

[181] Noel D. Uri *Agriculture and the Environment*. (New York : Nova Science Publications, 2006), 163.

the soil's moisture content and, practiced in combination with dry farming, could offset some of its challenges.

Carbon sequestration and albedo

Ploughing and harrowing aerate soils, and in the process release stored carbon, methane, and other greenhouse gases, whether naturally occurring or synthetic, such as residue from pesticides and manufactured nitrates. No till farming leaves greenhouse gases stored in the soil, while cover crops capture more of them from the air. Turned, 'raw' soils are generally darker than dust mulch layers and are not as reflective as the surface of leaves, thus, the albedo (reflectivity) of unturned land tends to be greater. This reflectivity has an overall cooling effect on land, in contrast to the thermal retention of darker surfaces, and therefore a comparatively cooling effect on the climate as a whole.[182]

Reduced energy consumption

Cessation of plowing, harrowing, and weed cultivation reduces the use of gas and diesel powered tractors. Where composting and cover crops replace harrowing, there is a decrease in the need for irrigation. Where irrigation is reduced, so is the expenditure of energy needed to pump and transport water, thus saving on fossil fuels and sparing waterways and aquifers.

[182] European Space Agency. Op cit..
http://www.esa.int/Our_Activities/Observing_the_Earth/Reflecting_on_Earth_s_albedo

According to Crop Watch at the University of Nebraska, Lincoln:

> "Advantages to no till farming include time, labor and fuel savings, reduced wear and tear on machinery, better plant stands due to improving soil tilth (less soil crusting), reduced soil erosion, reduced soil water evaporation, increased water infiltration into the soil and increased soil organic matter levels over time. There are other environmental benefits to no-till farming, but the main reasons why many farmers are no tilling dry land crops is because of the potential for higher yields in low rainfall years, timeliness in planting and being able to expand farming operations." [183]

Note that use of digging sticks still constitutes no till, as it does not create furrows with large fallow exposure in between plants.

Permaculture

Permaculture is a term that refers to a philosophy and a related set of practices applied towards agriculture, horticulture, and potentially any human-soil interactions, including construction and art practice. It was first used by Bill Mollison and David Holmgren in 1978 and originally referred to "permanent agriculture" (L. *permanentem* – "remaining", "enduring") (L. *ager* – "field", *cultura* – "cultivation").[184] Mollison later described it as denoting "permanent culture" (MF. colere – "tend", "guard", "care for") drawing inspiration from Fukuoka's philosophy of natural farming with in regard to the interconnections between human social dynamics and sustainable agricultural systems.

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[183] Pryor, Randy. University of Nebraska, Lincoln. *CropWatch*. January, 2009. http://cropwatch.unl.edu/web/cropwatch/archive?articleId=.INPUT$.NO-TILL.HTM

[184] Bill Mollison, *Permaculture Two: Practical Design for Town and Country in Permanent Agriculture* (Tasmania : Tagari Publications, 1979).

> "Permaculture is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labor; and of looking at plants and animals in all their functions, rather than treating any area as a single product system." [185]

> "Permaculture is an innovative framework for creating sustainable ways of living; a practical method for developing ecologically harmonious, efficient, and productive systems that can used by anyone, anywhere." [186]

According to Scott Pittman, founder of the Permaculture Institute, who co-taught with Mollison, it is "an ecological design system for sustainability in all aspects of human endeavor, teaching us to build natural homes, grow our own food, restore diminished landscapes and ecosystems, catch rainwater, and build communities." [187] Oliver Holgren also explained it as "a movement to assist people in becoming more self-reliant through the design and development of productive and sustainable gardens and farms." [188]

Permaculure is described by a set of core tenants, design principles, and common practices. It can also be described as a systemic way of thinking about interactions and problems that seek balance through cooperation with related entities and forces at work, rather than mitigation of symptoms. I was first exposed to the idea of permaculture by hearing a KPFA *Terra Verde* interview with Kat Steele (Urban Permaculture Guild) and

[185] Bill Mollison, *Permaculture Two: Practical Design for Town and Country in Permanent Agriculture* (Tasmania : Tagari Publications, 1979).
[186] www.permaculture.co.uk/issue/summer-2010 (accessed November, 2013)
[187] *www.permaculture.org/* See home page.
[188] Oliver Holgren "Weeds or Wild Nature" *Permaculture International Journal* Dec-Feb (1997).

David Blume (International Institute for Ecological Agriculture) who quoted Mollison as saying that "permaculture is the understanding that you don't have a slug problem, you have a duck deficiency."[189] As part of the research for this dissertation we have added two mallards to the yard, and found that in addition to snail abatement, they appear to produce more fertilizer than six of our chickens combined.

> "*Briefly*, when a design component isn't ecologically sound, community building, and careful in its use of resources, then it's pretty unlikely that it will work out in the long run. This ethic is the basis of sustainability and also makes excellent, long-term business sense. Systems designed with these ethics are ecologically sound, economically stable, community building, and don't leave future generations with a clean up bill for today's enterprise." [190]

In the following list of core tenants and design principles of permaculture I am paraphrasing Mollison from *Permaculture One,* and have added some examples from the research and first-hand practice.[191]

Core tenants of permaculture:

. *Care of the earth*: The first tenant is the provision for all life systems to continue and thrive, as, without a healthy environment, humans cannot thrive.

[189] KPFA *Terra Verde* August 17, 2012.
[190] David Blume on Coast to Coast Radio November 9, 2013 interview with host John Wells.
[191] Bill Mollison *Permaculture One* (Bath : Eco-logic Books, 1990).

. *Care of the people*: Providing for people to have access to the resources that they need in order to survive and flourish.

. *Return of surplus*: Reinvesting surplus back into its generative systems, which supports the first two tenants. This means eliminating waste where possible, and otherwise recycling it towards something useful within a given system.[192]

Twelve Design Principles:

1. Observe and interact: This means looking at as many aspects of a given environment or particular problem as possible and taking time to carefully consider the systemic factors and participants. In a number of the art projects that have been generated in the course of this research we have referred to it as *listening* to an environment as a form of the engagement with the environment prescribed by Mollison's writings, and the cultivation of "intimacy" with eco-systemic entities (soils) referred to by Vandana Shiva.[193]

2. Catch and store energy: Capturing and saving resources, especially during times of abundance where there may tend to be waste, preserves them for use during times of need and may significantly lower rates of consumption over time. Rainwater harvesting is specifically identified among the common practices of permaculture. Numerous others

[192]For a discussion, see *Development: Employment, Income Sustainability, Livelihoods* (3), CIDA:Ottawa, 1995.
[193]Bill Mollison, *Permaculture: A Practical Guide for a Sustainable Future*. (Tasmania:Island Press, 1990), 96.

are also to be found in permacultural practice such as passive solar heating, canning and drying of excess food yield etc.

3. Obtain a yield: Gaining useful results for labor is a form of efficient energy use. This can apply to wide range of endeavors, and demonstrates the potentially broad range of permacultural applications. A frequent conversation in the activist circles with whom this, and prior projects have brought me in contact, is how to engage environmental problems on the most efficacious and sustainable levels. While creative applications of activism may not want to be limited by models of efficiency, there is a value in considering how to reach the largest audience with the least expenditure of gasoline and other resources, for instance. In my own practice I have found the need to balance engagement with international and federal issues with local actions whose results are often faster and more measurable.

4. Apply self-regulation and accept feedback: This means discouraging counter-productive activity in order to keep systems functioning in a healthy manner.

5. Use and value renewable resources and services: This goes with an over-all reduction in consumptive behaviors such that we can make optimal use of renewable resources rather than being forced to use non-renewables such as fossil resources, or those such as soils which may renew in geologic rather than human temporalities.

6. Produce no waste: As an ideal, the notion of waste elimination strives to make optimal use of all resources available, where needed, without producing excess that cannot be saved or shared. There are activists that embody this ideal (as individuals) such as Bea Johnson and her family in Mill Valley, California,[194] or *No Impact Man,*[195] but it may function as or more effectively for the energy invested when practiced on a community level. Transition Towns and local (slow) economies are examples of moves in this direction. Food banks and *gleaning* of produce as forms of community-based food production are further examples that are growing as emergent practices.

7.) Design from patterns to details: Applying the "observation and interaction" of the first design principle means looking for larger patterns in systems of interaction and using them as guides. According to this idea, smaller details can fill in as one proceeds.

8.) Integrate rather than segregate: Allow and encourage entities and aspects of a system to work together and support each other, as they tend to do in natural systems.

9.) Use small and slow solutions: According to Mollison, small and slow systems are easier to maintain than those which are large, therefore making better use of local resources and functioning more sustainably in the long run. Local and slow movements

[194] Bea Johnson, *Zero Waste Home: The Ultimate Guide to Simplifying your Life by Reducing your Waste*, (New York : Scribner, 2013).
[195] Colin Beavan, *No Impact Man: The adventures of a guilty liberal who attempts to save the planet and the discoveries he makes about himself and our way of life in the process.* (Toronto : Farrar,Straus, and Giroux, 2009).

in the areas of food and economics appear to demonstrate the efficacy of shrinkage and reduced consumption that permacultural philosophy prescribes.[196]

10.) Use and value diversity: Biodiversity is widely credited as a source of resiliency in a given biological or ecosystem according to numerous articles that have been considered in the course of this research.[197] Diversity within an ecosystem generally increases restorative action and shortens timeframes necessary for remediation efforts, while reducing vulnerability to damage from external contamination, invasion, or destabilizing agents. The resilience of indigenous Maize varieties in Mexico (numbering in the thousands) that are uniquely adapted to regional microclimates and naturally resistant to most local "pests," is an example. By contrast the hybrid and GMO varieties of corn under mono-cultural production have proven to be highly vulnerable to a variety of external factors.[198]

11.) Use edges and value the marginal: According to Mollison, "the interface between things is where the most interesting events take place."[199] These may also be the most diverse, productive, and valuable aspects of a given system. Numerous examples can be

[196] Dustin Mulvaney *Green Food*, (Los Angeles : Sage Publications, 2011) discusses the impact of Mollison's opening pages in *Permaculture: A Designer's Manual*.
[197] See the detailed discussion *Biodiversity Conservation Law and Livelihood: Bridging the North South Divide*, Edited by Michael Jeffrey, Jeremy Firestone, Karen Bubna-Litic, (Cambridge University Press, 2008), 75.
[198] The problems and the consequences of the issues are clearly stated in Elizabeth Fitting's volume *Struggle for Maize: Campesinos, Workers, and Transgenic Corn in the Mexican countryside*, (Durham : Duke University Press, 2011), 43.
[199] See B.C. Mollison, *Permaculture: A Pratical Guide for a Sustainable Future, p. 70*

seen in convergences of differing environments or agents in the world,[200] such as the geologic and pedalogical diversity found above continental plate convergences, or the increased oceanic biodiversity found where warm and cold currents meet, to name a few.[201] The *edge effect* is cited specifically as among the common practices of permaculture.[202]

12.) Creatively use and respond to change: By carefully observing the environment we can detect change occurring and respond proactively. In ecosystems, as with physical bodies, early detection can prompt interventions before conditions reach unmanageable proportions or crisis. Creative use of change may mean responding to the inevitable, but in ways that produce unexpected solutions. "Some changes may appear outside of our control, but the way we think about them, how we react as individuals, groups, organizations, and networks is under our control.[203]"

Among the common practices of permaculture are the following:

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[200] K.V. Sundaram and M. Moni, *Sustainable development and Sustainable Life Styles* (Delhi : B.V. Foundation, 2003), 173.
[201] A description of this phenomenon is outlined in *Rare Earth: Why Complex Life is Uncommon in the Universe* by Peter Ward and Donald Brownlee, (New York : Copernicus Books, 2003), 203.
[202] The importance of the "edge" is seen in the volume edited by Jiquan Chen, *Ecology of Hierarchial Landscapes: From Theory to Application*, (New York : Nova Science Publications, 2006). Challenges related to this are described in the edited work of D.L. Hawksworth and Alan Bull *Plant Conservation and Biodiversity*. (Dordrecht : Springer, 2001).
[203] Mollison

Patterns - Permaculture strives to employ harmonious, synergistic practice in its interactions with both natural and man-made systems, and therefore encourages sensitivity to observations of patterns. Given the complexity of ecosystems (compounded by the complexity of human intentions towards them), the observation of, and attunement towards, patterns is seen as providing the likeliest portal to symbiotic practice. Much of the inspiration for thinking about interrelations between differing pattern systems and their potential conflicts with regard to permacultural practice is drawn from Christopher Alexander's pioneering work with Pattern Language and sustainable architecture.[204] While efficiency is highly valued, it is inspired by observations of naturally occurring systems and patterns such as branching, honeycombs, nets, waves etc., which are seen to combine beauty and strength. In other words the permaculture movement generally sees a critical difference between the non-symbiotic, alienated efficiency of industrial production (what Alexander refers to as "business as usual design") and patterns of efficiency that facilitate increases in livelihood and fulfillment found in sustainably functioning ecosystems. The later are the sources of inspiration that can be emulated through bio-mimicry or other creative applications in design processes.

Layers – While describing a physical state of affairs in ecosystems, layers are also described as eco-systemic design tools. The full range of layers is found in forested, or semi-forested areas. Permaculture identifies at least seven layers within forested land (zone 4-5 in a designed area) referred to by Mollison as a "food forest." More recently

[204] Christopher Alexander. *A Pattern Language: Towns, Buildings, Construction, (* Oxford University Press, 1977).

the term "food forest" also refers to the practice of close proximity (bio-intensive) planting where shrubs and small fruit trees make up the canopy layer.[205]

. The canopy – refers to the upper areas of the tallest trees in a given area. According to permacultural design, the tree cover does not constitute complete saturation, as that would limit the diversity of what grows underneath (see redwood canopy ecosystems).[206]

. The understory – is made up of lower, smaller tree cover, usually below forty-five feet in height (i.e. most fruit trees).

. Shrubs – The shrub layer is below the branch level of most trees, and includes berry bushes.

. Vertical layer – refers to climbing plants such as beans, peas, other legumes, and climbing berries.

. Herbaceous layer – will be most annual, perennial, and biennial plants including vegetables, small shrubs, and medicinal plants.

[205] Roman Dial, *Food Web for a Tropical Rain Forest,* (Palo Alto : Stanford University, 1992). Also the later work by Gary Polis, Mary E. Power, and Gary R. Huxel, *Food Webs at that Landscape Level.* (University of Chicago Press, 2004).
[206] Francis Stuart Chopin et. al. *Principles of Terrestrial Ecosystem Ecology*, (Dordrecht : Springer : Dordrecht, 2011), iv.

. Soil surface, ground cover layer – this is the area of cover crops which help control erosion by padding the soil surface from direct rainfall, and acting as living, and then decaying mulch. This is also the contact point for compost and fertilizer such as manure.

. The rhizospheric layer[207] is the area of mycelial interactions with the micro-fauna and flora of the upper soil horizons.[208] This is also the area of root crops such as potatoes and edible tubers.

More Common Practices:

Agro-forestry – agro-forestry is the practice of integrating trees and shrubs into a comprehensive, bio-intensive garden design, using the benefits of trees in proximity to other crops. Referred to as "forest gardening" or the establishing of "food forests" this practice combines forestry and agricultural techniques with the intent of maximizing land use in sustainable and mutually beneficial ways.[209]

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[207] An elementary but effective description if given by David H. McNear in his article "Rhizosphere-Rocks, Soils, and Everything In Between". http://www.nature.com/scitable/knowledge/library/the-rhizosphere-roots-soil-and-67500617
(Accessed December, 2013)

[208] The importance of this can be seen in the work of David Dowling and Bert Boesten, *Molecular Ecology of Rhizosphere Microorganisms: Biotechnology and the Release of GMOs*, (Weinheim :VCH, 1994).

[209] *Sustainable Forest Management*, edited by Klaus von Gadow, Timo Pukkala, Margarida Tome, (Dordrecht : Kluwer Academic Publishers, 2001). An interesting view is presented in B.W. Higman *How Food Made History*. (Oxford:Wiley & Sons, 2012).

Hugelkultur – Hugelkultur refers to the practice of burying large amounts of wood under the soil surface to increase water retention. It could be referred to as an inverse form of mulching. In this practice, wood is buried at the start of the wet season as the soil loosens and during the rains it may absorb enough water to sustain crops through the summer. This is an effective way to "mulch" scrap-wood without chipping and has been advocated by Sepp Holzer and Masanobu Fukuoka.[210]

Olla Irrigation

In the first century BCE Fan Sheng-chih Shu described a technique of irrigation using an unglazed clay pot filled with water and buried in the soil as a moisturizing tool.[211] Bisque-fired (low fired) clay remains porous and allows water to seep through, thus it can be used as a slow watering system for small areas of a garden. One of the advantages of olla irrigation is that there is little waste through evaporation. Rather than spread water out over the surface to be exposed to sun and wind, the olla jar delivers moisture slowly underneath the surface. Keeping moisture away from the surface of soil creates a dry layer of *dust mulch*, which acts to retain water while discouraging weeds

[210] Sepp Holzer, *Desert or Paradise: Restoring endangered landscapes using water management, including lake and pond construction*. (Hampshire : Permanent Publications, 2012). An older book by Masanobu Fukuoka has been updated and translated into English as *One Straw Revolution: An Introduction to Natural Farming*. (New York Review Books, 2009).

[211] This work was introduced to English reading audience in *On "Fangshengzhi Shu" An Agriculturalistic Book of China Written in First Century B.C.* by Shengzhi Fan (Beijing:Science Press, 1963.)

that do not yet have established root systems. Cultivated plants will send their roots towards the olla, eventually extending the range of its effectiveness.[212]

Another feature of olla pots is that they deliver only the amount of water needed for their immediate surroundings. Wet soil will not pull moisture through the clay, thus when soil is reasonably saturated, the remaining water in the olla stays in the container, and a stopper at the mouth prevents aerial evaporation. The standard eighteen-inch range of moisture may seem a small area, but with that, four pots can moisten a four-foot by eight-foot planter box (accounting for the clearance that most plants need). As we have found, a planter box of that size can produce hundreds of pounds of produce during a year. The olla's range can also be extended through the use of external mulch in addition to the dust layer. Thus it is an effective companion practice to no till horticulture, and an effective transition or rotation practice in combination with dry farming.

Our experiments with ollas have found a wide variety of results, but all of them useful. Some jars appear to leak (slowly) rather than seeping and will saturate an area more quickly, others will seep very slowly depending on how thick the clay is, how hot it became during the firing process, and on the quality of the clay. Very thin clay will seep faster, and it appears that 1/4 to 1/2 inch thickness is optimal. Temperature variations may not matter a great deal below the standard cut-off, and any firing below 1900 degrees Fahrenheit appears not to interfere with the clay being sufficiently porous. High quality porcelains are "tighter" clays than most others, but still seep quickly if their walls

[212] *Archaeology of Ancient Mexico and Central America: An Encyclopedia.* Edited by Susan Tobu Evans and David L. Vebater. (New York : Garland Press, 2001), 13.

are thin. Clay with a high "grog" content (sand and other impurities) such as the Amador clay that we use from Ione, California (Sierra Foothills), and the Zamora Loam (Foss Creek) that we mine and process ourselves seep a little faster (see figure 4-1 *Olla Irrigation Jars*).

The rate of 'perspiration' of an individual olla can be easily gauged since dry air pulls the moisture through just as with dry soil. Slow ollas will become cool and slightly damp, whereas fast ones will create a puddle on the table below them. Following a permacultural model, fast ollas would be placed towards the center of an area with "water-lovers" planted near it. Slow ollas would be towards the periphery with drier plants, and protective boundary shrubs such as perennials. While the area they affect

Figure 4-1

Olla Irrigation Jars
Zamora and Amador Clay
2013

may seem too small for large-scale projects, in a small yard with robust mulching they can significantly reduce the need for drip irrigation, and may eliminate surface watering

almost entirely, easily saving thousands of gallons of water a year. In our yard, which has a well (with an electric pump), rather than city water, this also amounts to a large reduction in the use of electricity.

Types of Ecology (Contemporary)

. Scientific Ecology.

Scientific ecology, as described earlier, consists of several branches of scientific study developed largely in the last three centuries.[213] They include biology, organic chemistry, earth science, zoology, and geology. They developed concurrently with a growing awareness on the part of individuals and organizations about the impact of human populations and practices on *environments* (eco-systems), and on *the environment* (the planetary ecosystem) as a whole. Their pursuit may or may not relate directly to practices or sensibilities largely understood as environmentalism (ecology movements). There are researchers working in fields related to 'natural' (eco-systemic) sciences who whose interests relate more to particular physical or chemical interactions, rather than systemic interdependencies, who may have no interest in issues related to conservationist sensibilities. Currently, however, there is a significant degree of crossover between environmental sciences and environmentalism/conservationism as demonstrated by soil

[213] The many facets of the study are discussed in E. David Ford's *Scientific Method for Ecological Research*. Cambridge University Press, 2004.

and climate reports presented at summits such as Kyoto and Rio de Janeiro.[214] Many of these reports have been of studies that generated environmental data that included calls for practical, legislative responses to their findings. Environmental organizations and their staff scientists such as Gina Solomon, Deputy Secretary for Science and Health at the California Environmental Protection Agency (also with the Natural Resource Defense Council), bring forward data for environmental studies that are directly connected to efforts to raise public awareness about environmental issues, and with calls for legislation or the litigation pursuant to them.[215]

. Humanist Ecology (Social Ecology).

Humanist ecology refers to a range of conservationist sensibilities related to issues of human adaptation to changing environments that maintain the idea that human beings are at the center of issues and systems related to our survival and well being. They are generally characterized by ecological undertakings specifically for human benefit, with the idea that where prioritizations need to be considered, human needs, as they appear can, and perhaps should, outweigh those of other potential stakeholders in a given situation.

[214] One of the best reports on these meetings is *The Kyoto Protocol: A Guide and Assessment.* Edited by Michael Grubb et. al. (London : Royal Institute of International Affairs, 1999).
[215] The growing literature in this area is best represented by publications such as *Toxicity Testing for Assessment of Environmental Agents Interim Report*. National Academies Press: Washington D.C. 2006.

Humanist ecology may be related to what Michael Pollan has referred to (in a comparative sense) as "industrial ecology", or "industrial organic", meaning practices undertaken to maximize human benefit in particular situations that are not necessarily disruptive of conventional practices.[216] Earlier examples were described in conservation efforts undertaken for the perceived aesthetic value of preserving areas of beauty for human enjoyment. Other examples can include 'green capitalism', using a 'triple bottom line' as described by Lester Brown, but where environmental costs are considered though not necessarily prioritized in a business model.[217]

Criticisms of humanist ecology have included that its tendency to remain philosophically species-centric make it potentially resistant to accepting changes to what Brown terms "business as usual" (or, "the status quo"), describing the range of practices implicated in current environmental decline.[218] The Nature Conservancy has recently adopted the tactic of representing 'nature' as wholly commodifiable, in order to try to maximize financial investment in its preservation.[219] Whereas, the tactic of placing environmentalist discourse largely within the parameters of industrial cultures and

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[216] Michael Pollan, *In Defense of Food: The Myth of Nutrition and the Pleasures of Eating*, (New York : Penguin, 2008).
[217] Lester R. Brown, *Plan B 4.0: Mobilizing to Save Civilization*, (New York : Norton, 2009)
[218] Ibid p. 192
[219] See the descriptions of the Nature Conservancy in *International Encyclopedia of Civil Society* edited by Helmut K. Anheiser and Stefan Toepler , (New York : Springer, 2010),1026-7.

industrial economics is viewed by some critics such as Bill Mckibben as being too conservative to respond effectively to the current environmental data.[220]

. Deep Ecology

"Deep ecology" is a term coined by Arne Naess, though it refers to a wide range of ecological ideas and related practices centered on a holistic understanding of eco-systemic interrelations going back to Steiner and others near the turn of the century.[221] Deep ecology is largely based on various efforts to raise the perceived value of non-human environmental entities towards what are termed "eco-centric" rather than species-centric viewpoints. Deep ecology is directly related to many permacultural sensibilities and practices in that its "depth", according to Naess, is constituted by its acknowledgement of the far-reaching interconnectedness of all life on the planet. Along with some of the tenants of permaculture, there are deep ecological tenants as described by Naess and George Sessions (Foundation for Deep Ecology):[222]

1. The wellbeing and flourishing of human and nonhuman life on Earth have value in themselves (synonyms: inherent worth, intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.

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[220] This is addressed in all of his works, but an overall view is found in his *Deep Economy: The Wealth of Communities and the Durable Future*. (New York : Holt, 2007).

[221] See *The Selected Works of Arne Naess: Deep Ecology of Wisdom* edited by Arne Naess and Alan R. Drengson, (New York : Springer, 2005). The original use was in the article "The Shallow and the Deep" which appeared in *Inquiry* vol 16, 1973 p 95-100.

[222] Bill Devall and George Sessions edited *Deep Ecology: Living as if Nature Mattered* , (Salt Lake City : Gibbs Smith, 1985) where many of these lists appeared.

2. Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.

3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.

4. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.

5. The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of nonhuman life requires such a decrease.

6. Policies must therefore be changed. The changes in policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.

7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent worth) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.

8. Those who subscribe to the foregoing points have an obligation directly or indirectly to participate in the attempt to implement the necessary changes[223].

Criticisms of deep ecology include that in describing itself as "deep" that it assumes a greater roll (superior stance) in relation to other forms of ecology.[224] Unlike

[223] The challenges are raised by Edwardo Lao Rhodes in *Environmental Justice in America: A New Paradigm*. (Bloomington : Indiana Press, 2005).

some of those forms of ecology that deep ecology might like to supersede, it is based largely on ideology rather than science and may be prone to exaggeration or misinterpretation of facts. However, those who have leveled some of these criticisms from within ecological frameworks do not dispute that the science is calling for significant conservation efforts.

. Feminist Ecology

Feminist ecology (or eco-feminism) can be described as a range of ideas, and practices, that critique the perceived relationship between ecological studies and cultural patriarchies, or describe eco-systemic bodies as being largely female in character. They often compare the exploitation and attempted domination of land and eco-systems to that of the exploitation of women in patriarchal societies. They may also emphasize what is perceived to be a unique relationship between women and the planetary body. Further, as Vandana Shiva points out, that women who do subsistence work in cooperation with their (natural) environments, have a unique range of knowledge related to soils and other eco-systemic entities.[225] She describes this knowledge as being of a different character than is

[224] A major assessment appears in *Beneath the Surface: Critical Essays in the Philosophy of Deep Ecology*, edited by Eric Katz, Andrew Light, and David Rothenberg. (Cambridge : MIT Press, 2000).
[225]Vandana Shiva, *Staying Alive: Women, Ecology and Development.* (New Delhi : Kali, 1989).

generally seen as the extractive, exploitative models of patriarchal capitalist practice, and she has described *Navdanya Farm* as a female centered project.[226]

Feminist ecology's emphasis on interrelations between different eco-systemic entities, and the potential for women to develop a uniquely intimate knowledge of them tends to place feminist ecology in the arena of "deep ecology." However, it has also been criticized by some of those even in deep ecology circles as over-emphasizing mystical relationships between women and the earth, or unnecessarily 'genderizing' ecological thought.[227]

Vandana Shiva and *Navdanya*

Navdanya ("nine seeds") is a non-governmental organization founded in India by organic farming and food sovereignty advocates, including Vandana Shiva, in 1984. It has grown to be the largest direct marketer of fair trade, heirloom seeds in the country, currently having set up one hundred and eleven seed banks and fifty thousand sustainable farming collectives across sixteen states in India.[228] *Nine seeds* refers to the protection of biodiversity advocated by Navdanya, and to "new gift", referring to the "gift of seed". According to Shiva,

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[226] Vandana Shiva, *Earth Democracy: Justice, Sustainability and Peace.* (New York : South End Press, 2006). See p. 67 for a discussion of Navdanya Farm.
227 Janet Biehl, Rethinking Ecofeminist Politics. (Cambridge : South End Press, 1991).
228 Vandana Shiva, "Globalization and the War against Farmers and the Land" in Essential Agrarian Reader: The Future of Culture Community and the Land. (Lexington: University of Kentucky Press, 2003).

"Seed is the basis and sustenance of the commons, based on the practice of saving and sharing seeds. Seed savers are the true givers of seed. This gift is the ultimate gift. It is the gift of life. Conserving seed is conserving biodiversity, conserving indigenous knowledge, and conserving sustainability."[229]

The organization began as part of Shiva's Research Foundation for Science, Technology, and Ecology (RFSTE), set up to support environmental activism. They have been at the forefront of numerous political and legal efforts to promote food security and seed sovereignty in India and elsewhere.[230] Since the early 1990's they have campaigned against non-sustainable agro-business practices, genetically modified crops, and the patenting of indigenous seeds. Their anti- "patenting of life" campaigns refer to the attempts to patent indigenous seed and traditional farming methods as "biopiracy."[231]

In 1994 Navdanya challenged the patent filed by WR Grace and the United States Department of Agriculture to gain ownership of neem oil from the Indian Lilac tree for its fungicidal properties. Navdanya and the Research Foundation for Science, Technology, and Ecology, along with the International Federation of Organic Agriculture Movements (IFOAM) delivered one million signatures to the European Patent Office in Munich as part of their petition. Six years later the patent was partially revoked, and nullified entirely in 2005 based on lack of "any inventive step" in the patent.[232]

229 www.navdanya.org/ (Accessed August, 2013). Shiva, Vandana. Keynote speech at the Santa Rosa Heirloom Festival, Santa Rosa, California. (September, 2013).
230 blogs.worldwatch.org/nourishingtheplanet/tag/rfste/ (Accessed August, 2013)
231 Vandana Shiva, Biopiracy: The Plunder of Nature and Knowledge. (Cambridge : South End Press, 1996).
232 www.hindu.com/2005/03/09/stories/2005030902381300.htm (Accessed October 2013)

The next major bio-piracy campaign was Navdanya's challenge to the Basmati rice patent by the US corporation RicTech in 1998. In 2001 the patent was revoked by the United States Patent and Trademark Office (USPTO) on grounds of false claims made by RiceTech about their "inventive' traits achieved by selective breeding.[233]

A prominent and vocal opponent of Monsanto, Navdanya launched the Campaign against Patents on Life, which helped overturn Monsanto's 2003 patent on Indian Nap Hal wheat. The patent (EP 0445929) had been initially granted by the European Patent Office (EPO) in Munich. Shiva's Research Foundation for Science, Technology, and Ecology filed a petition with the EPO, along with Bharat Krishak Samaj, and Greenpeace, and succeeded in having it revoked.[234]

In addition to the current "Seeds of Freedom" campaign, Navdanya has founded *Bija Vidyapeeth*, "school of the seed", or "school of the earth", which is an education center dedicated to promoting sustainable practice and conservation of biodiversity on its farm in the Doon Valley, north India.[235] One of the main principles of its practice is that no agriculture is undertaken that does not have the *building* of soil as its goal. This is agriculturally ambitious, given the propensity for agriculture to pull minerals and other nutrients out of the ground. Bija Vidyapeeth relies on a variety of methods to achieve extractive neutrality and even growth of soils, including crop rotation, cover cropping, composting, mulching, and spreading organic manure. The cow as manure source is central to their practice, and according to Shiva, this explains why the Brahma Cow is

233 www.nytimes.com › COLLECTIONS › BASMATI (Accessed December, 2013)
234 omega.twoday.net/stories/366494/ (Accessed December, 2013)
235 www.navdanya.org/earth-university (Accessed August, 2013)

considered sacred in Hinduism. However, the cooperative relationship with cattle is balanced in terms of their numbers. As she states, "Two cows are a gift. Ten thousand cows are a problem."

The Natural Builders, El Cerrito, California

The Natural Builders in El Cerrito are Kevin Rowell and Marisha Farnsworth who demonstrate some of the contemporary uses of manure as part of building and *cob* design. The manure is largely used in the way that Vandana Shiva has described, as external plaster, but mixed with straw, is strong enough to be used as a component of structural materials as well. "The cob construction consists of using site specific dirt and other building materials collected and mined from the immediate building location to make cob (adobe), as part of a more intimate interaction with local environments, to minimize transportation, and to eliminate the large scale displacement of soil that is common in conventional construction.[236] It also minimizes or eliminates the use of heavy machinery. "We use horses to process our straw, which adds enzymes that produce an incredible hardness."[237]

As Farnsworth and Rowell point out, people have been making sun-dried clay bricks, or adobes, for millennia. Clay soil is usually mixed with sand, water, and straw. This mixture is then pressed into forms to make bricks. When dry, the bricks are stacked with

[236] www.manta.com/c/mmcstr0/the-natural-builders
http://www.naturalbuilding.com/natural-building/cob/ (Accessed August, 2013). Kevin Rowell interview. *Dirt (The Movie).*
[237] Cob construction with manure
http://www.ehow.com/how_4853109_build-cobb-house.html (Accessed August, 2013)

clay/sand mortar in between to make walls and even domed or vaulted roofs. The ubiquity of suitable materials and the simplicity of production and assembly have made adobe a popular building system worldwide. Considered one of the oldest man-made uniform building materials, adobe has gone through many evolutions during its long history.

In Californian, as in many areas of the world, there are adobe buildings from the 1700's that are still standing. Although there is good reason to be concerned about the use of adobe in earthquake-prone regions, recent engineering innovations have improved the safety factor to the point where adobe can be a good solution almost anywhere. Kevin Rowell reports, "We have been involved with reengineering and rehabilitating historical adobe structures to be more seismically resistant."[238]

Guerilla Gardening

Unauthorized use of private property, or 'claimed commons', for gardening may go back as far as poaching on land privatized by monarchies or other state bodies. However, contemporary use of the term "guerilla gardening" may be ascribed to Liz Christy who started the "Green Guerillas" in 1973.[239] Christy used seed balls which she termed "seed grenades" or "green grenades" to sow a vacant lot in New York (Bowery

[238] *www.naturalbuilding.com/natural-building/cob/* (Accessed August, 2013)
[239] *Placing Nature on the Borders of Religion, Philosophy and Ethics*. Edited by Forrest Clingerman and Mark H. Dixon. (Burlington : Ashgate, 2011), 75.

Houston), which still exists under the protection of the city's parks department.[240] Guerilla gardening is used by numerous groups around the world as a form of protest and activism. It is used to beautify abandoned or denuded lots, especially in urban areas, to grow food crops, and to make statements about the politics of land use and public vs. private spaces.[241]

Prevalent examples of guerilla gardening have included:

Occupy the Farm, Gill Tract
(Occupy University of California Berkeley)

This is a one hundred four acre area of historic farmland in Albany, California, which was purchased by the University of California in the 1930's. All but fifteen acres have been paved over for development since then. For the past fifteen years there have been efforts by various student and community groups, most recently Occupy UC Berkeley, Transition USA, and Occupy the Farm to preserve the open land for community gardening. Some of the land has remained in agricultural production over the years as an open-air lab. As part of its effort, Occupy the Farm began taking direct action in April, 2012, putting the land back into community agricultural use, and physically occupying the land in defiance of the university's posted no trespassing orders. The gardeners were driven off in a police raid in May of 2012, but returned again the

[240] David Tracey, *Guerilla Gardening: A Manifesto*. (Garbiola Island : New Society, 2007), 34.
[241] http://www.takebackthetract.com/ (Accessed August, 2013).

following year. In May 2013 they were driven off by another police raid, and since then have shifted their efforts to attempting to partner with agro-ecology researchers at the university's College of Natural Resources.[242]

The South Central Community Garden

Located in South Los Angeles, the SCCG was a fourteen acre plot of land used as a community garden for twelve years from 1994 to 2006, and was considered one of the largest urban farms in the U.S.[243] The land was purchased under eminent domain by the city with the intention of using it for a waste conversion plant, but the plans were abandoned over protests by neighbors. The city sold the lot in 2004, and in 2006 the farmers were forcibly evicted and the land was bulldozed. It is the subject of a documentary titled *The Garden*, which was nominated for an Academy Award in 2008.[244]

People's Park

Ho Chi Minh Park, as it is now called began as a vacant lot in Berkeley, which the University of California had acquired for campus expansion before it became a source of controversy. It has not been used for any buildings since the protests of the 1960s.[245]

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[242] www.takebackthetract.com/ (Accessed June, 2013).
[243] Jeffrey Hou, *Insurgent Public Space: Guerilla Urbanism and the Remaking of Contemporary Cities*, (Abingdon : Routledge, 2010), 243.
[244] http://www.thegardenmovie.com/ (Accessed July, 2013).
[245] Alex Stelter, *The Last Public Space: People's Park in Berkeley*, Research report: (Berkeley, Fall 2009).

One very prevalent form of guerilla gardening in Northern California is growing marijuana on other people's property, or on state or federal land.[246] Ecologically, it tends to be associated with a lack of stewardship, and the environmental consequences are, largely, seen as being adverse by many residents of the northern counties.

Seed Balls – Seed Bombing

Seed balls are small balls of dirt, plant seeds, and clay that are used to sow vegetation in areas that are hard to access, or are otherwise restricted. They may contain various other forms of fertilizer, and sometimes use cotton fiber or paper to add stability (some large-scale seed ball projects have included pesticides as well).[247] In guerilla gardening circles, they are often referred to as *seed bombs*, which can used to sow vegetation on public or private land at a distance, across fences, over walls, etc. without permission. It is also, therefore, a form of no till farming, and has a potential to be used to increase food production outside of traditional agricultural models. Christy's *seed grenades* were balloons filled with dirt, fertilizer and seeds thrown over fences into vacant lots in New York City, including the Bowery Houston lot, which has become permanently established as a city garden.[248] More recently, practitioners tend to use biodegradable containers rather than plastic to avoid littering with petrochemical- based

[246] "Drug Production on Public Lands---a Growing Problem" *House Reports, Issues 804-811*, United States Congress, House of Representatives: October 10, 2003.
[247] Kelly Coyne and Eric Knutsen, *Urban Homestead: Your Guide to Living in the Heart of the City*, (Port Townsend : Process Media, 2008),4.
[248] Richard Reynolds, *On Guerilla Gardening: A Handbook for Gardening without Boundaries*, (London : Bloomsbury, 2008),75.

materials.[249] Seed bombing can be used as a form of protest and activism, or for general erosion abatement in hard to reach areas. *Aerial reforestation*[250] can be another form of seed bombing, usually done by logging companies, when required, or by the Forest Service. Although aerial seed bombing would be of interest to our projects, it is, so far, prohibitively expensive.

Seed balls have probably been used since ancient times, although my research has not found records of specific usage in antiquity. In the 20th Century there was a renewal of interest in seed balls generated by Masanobu Fukuoka's work with "nendo dango" (*earth balls*), which he saw as a potential way to increase food production on marginal or perimeter lands.[251] By sowing in smaller areas, with a wider variety of crops, there would be the potential to increase food production and stabilize soils impacted by farming (such as with bare-sided levies used to trap water in rice paddies). Fukuoka saw this as a biodynamic way to move agriculture into forest perimeters (potentially based on a food forest model) without simply clearing land needed to grow additional crops. This would be a practical approach in many areas of Japan where semi-tropical rains are

[249] A good study is found in "Land and Seeds: The Cultural Ecological and Global Politics of Organic Agriculture in Latvia and Costa Rica" a doctoral dissertation by Guntra Anda Aistare (University of Michigan, 2008). Also see Balloons Blow.org.
[250] There are problems with this type of distribution of seeds (i.e. no uniformity of spread, rodent removal of seeds, etc). see John Berger (ed) *Environmental Restoration: Science and Strategies for Restoring the Earth*, Island Press: Washington D.C. 1988. P 85. This is a selection of papers from Restoring the Earth Conference (University of California, Berkeley:1988).
[251] A description of Fukuoka's approach is found in Sandor Elizabeth Katz, *The Revolution Will Not be Microwaved: Inside America's Underground Food Movement*. (White River Junction : Chelsea Green Publications, 2006), 104.

frequent, and rice paddy boundaries are often heavily forested and very steep.[252] For this reason, clearing trees usually means immediate erosion problems, but a perimeter food forest model in tandem with limited, selective timber thinning can work quite well.

Seed bombing has also come into play in our projects in a variety of ways. My first attempts were with seeding what I referred to as *devastated spaces,* that is, marginal, unused land such as freeway boundaries. Initially this involved simply throwing seeds out during the end of the rainy season to see what would happen. The results were usually not very successful, though I have found a few "volunteers" during subsequent seasons. Likewise when I went with a group of my photography students and spread large amounts of wild flower seeds along railroad tracks in Healdsburg, hoping to come back a find an increase in the usual springtime poppy bloom, there was no noticeable change.

What I missed initially was the clay component. As Logan points out, clay may be nearly as critical a component for the origins of life on the planet as water, and the discovery of the necessary seed ball ingredients in the course of my research has recently moved the work forward.[253] Added to this is some of the past and current work with local clay loams for ceramics projects that have been done independently, and with student collaborators. Four years ago I began gathering and processing Yolo Clay Loam

[252] A collection of his writings has been published posthumously *Sowing Seeds in the Desert: Natural Farming Global Restoration and Ultimate Food Security.* (White River Junction : Chelsea Green Publishing, 2012).
[253] Cary Fowler, *Unnatural Selection: Technology, Politics and Plant Evolution*. (Amsterdam : OPA, 1994).

from the banks of the Russian River, some of which was used in a *Pedon* piece, and was featured in the Dirt Gallery exhibit. More recently, my students and I have been mining and processing larger amounts of Zamora Clay Loam from Foss Creek not far from where it enters the Russian River.[254] The Zamora Loam is currently being used to make seed bombs in fairly large volumes, and is being used by photography students to seed areas around town for increased subject matter, and by others to sow vegetables and butterfly/bee gardens in perimeter (devastated) spaces around Healdsburg. Independently I am also sowing roadside spaces. One of the learning processes herein is that we do not want to attract animals to roadsides, especially freeways, so we are being selective about what we plant in those vicinities. (See Figures 4-2 and 4-3).

This local seed bombing has the potential value of growing harvestable vegetation, which, like the food from our school gardens can be donated to local *food banks*. We are also sowing both annuals and perennials for butterfly and *bee gardens*, which can be a benefit to struggling local and migrating pollinators. The addition of

[254] For a full description of these soil types see Vernon C. Miller, *Soil Survey, Sonoma County*. Forest Service, Soil Conservation Service, United States and California Agricultural Experiment Station. May, 1972.

Figure 4-2

Seed Bombs
Zamora and Amador Clay, Dirt, Seeds!

Figure 4-3

Seed Bombing
(Student Collaborations)
Healdsburg, CA
2013

vegetation on roadway embankments can also serve as erosion abatement. Another learning processes with the seed bomb projects has been that traditional seed bombs are

round, and simply roll back down hillsides and ravines when thrown. Another benefit to bringing in more complex sculptural elements to the designs is that they are better at staying put after being thrown or deposited. Also in the interest of stability, wider, flatter shapes make the objects more compatible with adding prepared sections of tree-seed and mycelium impregnated cardboard from Stamets *Life Boxes*.[255]

As students begin to participate in harvesting the guerilla produce, there will be press releases, and other forms of publicity gathering, which will help to inform the local community about the potentials of periphery planting. This will be in relation to the consumable food grown, but also with regard to the pollinator gardens, which may help publicize the decline of their numbers. It may also provide a platform to publicly address the causes of pollinator decline, and the effects of nicotinoid pesticide use that is prevalent in vineyards, which are the primary cash crop in our area.[256]

Another aspect of the Yolo and Zamora based seed bombing that is of interest to our projects is the site specificity of the materials that are involved. Most reporting on seed bombing projects do not specify from where the clay is obtained. In some cases it may be local, but in others it may have traveled significant distances and been commercially obtained. By mining our own clay, we are adding an element of intimacy to the process, whereby the material used was dug, carried, sifted, wedged, and formed into bombs (some of which will be sculptural) by the participants. While commercial

[255] Paul Stamets. Life-Boxes: http://www.lifeboxcompany.com/
[256] Michael Schacker, *A Spring Without Bees: How Colony Collapse Disorder has Endangered our Food Supply*. (Guilford : Lyons Press, 2008),96.

clay is probably not environmentally intrusive, the use of local material seems more "at home", and may provide participants with a sense of working with local land cooperatively rather than having to bring in something external. In this spirit we are also working with nurseries in the area to obtain local *heirloom seeds* where possible. Herein is another provided opportunity to publicize the work of local organizations such as the Petaluma Seed Bank, which in addition to selling heirloom seeds, is active in promoting heirloom as a horticultural philosophy.[257] This is in contrast to conventional practices, which are more intrusive, demanding and damaging of soils.[258]

Transition Towns

Transition Towns are based on permacultural concepts as grassroots efforts to address environmental degradation and economic issues (dysfunctions) on a community scale.[259] It was conceived by Bob Hoskins at Kinsale Further Education College in Ireland, based on a student collaboration project inspired by David Holgren's *Permaculture: Principles and Pathways Beyond Sustainability*.[260] The term "transition

[257] Janisse Ray, *The Seed Underground: A Growing Revolution to Save Food,* (White River Junction : Chelsea Green Publications, 2012).
[258] Our digging spot for Zamora Clay is on an already heavily eroded embankment, which exposed it. We acknowledge that digging into it won't help. However, with the thickness of the clay our shovel cuts produce almost no sediment and we do not consider taking our a few buckets to be at odds with our other Foss Creek Restoration activities. We are also looking for other deposits further away from water. http://russianriverkeeper.drupalgardens.com/content/foss-creek-community-restoration

[259] Rob Hopkins, *The Transition Companion: Making your Community More Resilient in Uncertain Times.* (White River Junction : Chelsea Green Publications, 2011).
[260] Rob Hopkins, *Transition Communities: A Pocket Guide*. (Cambridge : UIT, 2011).

town" was coined by Louise Rooney and Catherine Dunne at Kinsale, which was been designated a "faire trade town" in 2005 (as was Healdsburg, California in 2011).[261]

The project spread to Totnes, England where Hoskins and Naresh Giangrande continued to develop the concept, launching the Transition Network in 2007.[262] Some if its suggested practices include starting community owned businesses, which encourage localization of resources. Community owned banks, which incorporate slow money concepts such as sharing, barter, reinvestment in community, and investment in green technologies and sustainability projects. Urban gardening and local food growing collectives that encourage sharing, community building, and reducing the distance that food travels from centralized distribution systems (the slogan "food feet, not food miles" addresses the issue of James Kunstler's "3000 mile Ceasar Salad").[263] Additionally, the network encourages and seeks to support transitions to local, green energy and the reduction of energy consumption through conservation and increased efficiency (community bank loans for weatherproofing houses, for example). These efforts in combination are referred to as "REconomy"[264] which describes an effort to build more sustainable, resilient communities supported, in part, by Transition Network's trainings, tutorials, and other educational resources.

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[261] Tania Ellis, *Sustainable Business Success Through Social Innovation and Social Entrepreneurship*, (Chichester : Wiley, 2010). Paul N. Bloom, *Scaling Your Social Venture: Becoming an Impact Entrepreneur*. (New York : Macmillan, 2012).
[262] See Harriet Bulkeley and Peter Newell, *Governing Climate Change*, (New York : Routledge, 2010), 128. Liam Leonard and John Barry, *The Transition to Sustainable Living and Practice*. *Advances in Ecopolitics*, vol 4. (Bingley : Emerald Group Publishing, 2009).
[263] Jeff Siegel, et. al. *Investing in Renewable Enegery: Making Money on Green Chip Stocks*, (New York : Wiley, 2008), 149.
[264] http://www.reconomy.org/ (Accessed November, 2013).

Since 2007, Transition Towns have spread to more than forty countries around the world. Examples include "Transition Streets" in Totnes (Devon) where over seven hundred households participated, and each was able to reduce their energy consumption by an average of over a ton of CO2.[265] In 2007 a neighborhood in London launched the Brixton Pound intended to encourage more localization of the economy and shorten supply lines, thus reducing dependence on fossil fuels.[266] In 2012 the Bristol Pound was launched, along with a pay by text system managed by the local credit union. The Brixton and Bristol Pounds are intended to work along side rather than replace the Sterling. So far nearly two hundred thousands pounds have been converted to Bristol Pounds which could account for nearly two million pounds worth of economic activity.[267] Other Transition examples are found in gleaning projects such as Transition Sarasota (Florida) where the Suncoast Gleaning Project donated seventy five thousand pounds of produce to the local food pantries off of just one three acre farm.[268] On a smaller scale, the Healdsburg High Progressive Club has donated nearly a thousand pounds of produce a year from our two small planter boxes.[269] Gleaning projects benefit communities by making food available to those in need, and farmers benefit because they can deduct the

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[265] Maurie J. Cohen, et.al. *Innovations in Sustainable Consumption: New Economics, Socio-technical Transitions and Social Practice.* Advances in Ecological Economies Series. (Cheltenham : Edgar Publishing. 2013), 142.
[266] Richard Simpson and Monika Zimmerman. *The Economy of Green Cities: A World Compendium on the Green Urban Economy. Local Sustainability* vol 3. (Dordrecht : Springer, 2012), 181.
[267] Bernard Lietaer and Jacqui Dunne. *Rethinking Money: How New Currencies Turn Scarcity into Prosperity.* (San Francisco : Berrett-Koehler, 2013),114.
[268] transitionsarasota.org/gleaning/ (Accessed December, 2013)
[269] healdsburg.towns.pressdemocrat.com/.../progressive-students-educate-the... February 20, 2010. (Accessed February, 2013).

full market value of produce that is harvested by volunteers. In Fujino, Japan, the community bank (Local Exchange Trading System) became a key part of the response to the Fukushima Daichi disaster (3/11), as it was more quickly able to get support and donations to affected communities. Fujino is also in the process of transitioning to locally generated power (largely solar).[270] Efforts such as these have gained considerable attention since Fukushima.[271]

The number of Transition Towns in the US has now grown to over one hundred and forty. In the course of this research I have become involved with Transition Town Sebastopol and Transition Healdsburg, both of which have recently grown in size. Transition USA reports a boost in visibility as a result of Bob Hoskin's recent speaking tour in the US.[272] Marissa Mommaerts, the director of Transition Town Sebastopol, states that the movement is growing locally and internationally for a variety of reasons, including the number of members of Occupy Sebastopol (which continues as of this writing) looking for a way to re-energize and expand community oriented projects.[273] As Vandana Shiva has stated, *community building* (both human and eco-systemic) is the "next thing" and is probably our best hope to increase our adaptability and resilience to environmental challenges.[274] In a recent interview, Bill McKibben stated that "climate

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[270] Jack Appleton, *Values in Sustainable Development. Routledge Studies in Sustainable Development*. (Abingdon : Routledge, 2014), 176.
[271] David Elliott, *Fukushima: Impacts and Implications.* (New York: Palgrave Macmillan, 2013).
[272] www.transitionus.org/ (Accessed November, 2013).
[273] http://www.transitionsebastopol.org/ (Accessed December, 2013).
[274] *therightsofnature.org/tag/vandana-shiva/* (Accessed November, 2013).

change is probably too big for the environmental movement to deal with by itself".[275] But, according to Marissa Mommaerts, "when we combine the environmental movement with economic justice and social justice movements, slow food, slow money, and localization movements we get a lot bigger. When we focus all that energy on specific local projects we get a whole lot more effective. That's what we are doing here".

Other Forms of Environmental Activism

Some of the ecological strategies for conservation mentioned here are considered forms of activism in their own right. According to Vandana Shiva, the practice of seed saving and community farming constitute not only an evolutionary (re)embrace of better relations with life's greatest gifts, but are in themselves forms of resistance against the biotech companies that "sell starvation" for their own profit.[276] In *Protesting With Permaculture*, Nicole Vosper describes applying permacultural models as working solutions to environmental threats such as hydraulic fracturing (petroleum extraction), and to the processes of organizing against them as well.[277] The models, tactics, and strategies described in this dissertation are, potentially in themselves, activism in practice. Thus, it is difficult to separate "activism" and "practice", academically, and rather, I am itemizing some of the key practices in which my research has been directly involved as different, but not necessarily separate practices.

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[275] www.seattlesymphony.org/benaroya/browse/dateview.aspx?dt. (Accessed November, 2013)
[276] billmoyers.com/.../vandana-shiva-on-the-problem-with-genetically-modied. (Accessed September 2013.
[277] www.permaculture.co.uk/back-issues (Accessed September, 2013)

In the course of environmental art practice and activism some of the projects we have undertaken have led us to support, or brought us into the company of, groups that have been labeled as *extremists* by various media organizations. Environmental extremism, when it involves civil disobedience and direct action is sometimes referred to as "eco-saboteurism" both by critics and practitioners.[278] The Industrial Workers of the World define sabotage as "any withdrawal of efficiency including *slow-down*, the *strike*, *working-to-rule*, and *creative bungling* of assignments"[279]. These were espoused by Big Bill Haywood during the formation of the IWW, following his trip to Europe where he witnessed European workers "throwing wrenches" (or, a wooden clog – *sabot*) into the gears of machines, and going on strike.

> "The experience that had the most lasting impact on Haywood was witnessing a general strike on the French railroads. Tired of waiting for parliament to act on their demands, railroad workers walked off their jobs all across the country. The French government responded by drafting the strikers into the army and then ordering them back to work. Undaunted, the workers carried their strike to the job. Suddenly, they could not seem to do anything right. Perishables sat for weeks, sidetracked and forgotten. Freight bound for Paris was misdirected to Lyon or Marseille instead. This tactic — the French called it "sabotage" — won the strikers their demands and impressed Bill Haywood."[280]

[278] Norman Miller. *Environmental Politics: Stakeholders, Interests and Policymaking* (Abingdon : Routledge, 2008), 93.
[279] A description of this tactics is found in Brian Greenberg, et. al. *Social History of the United States*. (Santa Barbara : ABC-Clio, 2009).
[280] Melvyn Dufosky, *"Big Bill" Haywood*. (Manchester : University Press. 1987), 57.

Eco-saboteurism is in turn labeled by some practitioners as "*ecotage*", and by some critics as "eco-fascism" or "eco-terrorism"[281]– reported that the term "eco-terrorist" was mentioned by the prosecution in Tim DeChristopher's trial although no such formal charges were brought as a result of his "saboteurist" action of outbidding Chevron at a public auction. In the case of the Earth Liberation Front trial, members were formally charged with "terrorism" for involvement with the series of arsons for which the ELF claimed responsibility.[282] The Earth Liberation Front is perhaps the best known among such groups because of their high profile arsons that were widely reported by the mainstream press in the US.[283] Earth First! has also incurred that label in the mainstream media.[284] Much of their work has been non-violent, prankish, and has conscientiously avoided harming people, according to co-founder Mike Rosell . However, they are a loose knit organization, and some activists who have claimed to be affiliated with EF! have engaged in tree-spiking, which has the potential to harm loggers, and is intended to *scare* them away from cutting in those areas. [285]

Greenpeace

Greenpeace was founded in 1971 by a group of activists who were protesting the underground testing of nuclear weapons at Amchtka Island in the Aleutian chain of

[281] Sue Mahan and Pamela L. Griset. *Terrorism in Perspective.* (London : Sage, 2008), 209.
[282] www.peacefuluprising.org/climate-trial (Accessed November, 2013).
[283] A listing of the activities for a five year period is found in: Leslie James Pickering, *Earth Liberation Front, 1997-2002.* (Portland : Arissa Media Group, 2007).
[284] Derek Wall, *Earth First! and the Anti-Roads Movement*. (London : Routledge, 1999).
[285] Kevin Michael DeLuca, *Image Politics: The New Rhetoric of Environmental Activism*. (Mahwah, N.J. : Lawrence Erlbaum, 1999), (reprint in 2012).

Alaska. The island was considered a refuge for birds and sea otters, which had been driven to the brink of extinction by the Russian fur trade, The group organized a boat (the *Phyllis Cormack*) and sailed for Amchitka to "bear witness" in the Quaker tradition of silent protest.[286] They were intercepted before reaching the island, while at the same time, the Nixon Administration announced a delay to the test, which eventually was carried out. However, the Cormack's voyage caught public attention; tests were ended the same year and the island was declared a bird sanctuary. Within a few years Greenpeace had begun to spread, and in the early seventies, Greenpeace International was founded as an umbrella organization for the varied regional groups.

With the stated goal of "ensuring the ability of the earth to nurture life in all its diversity", Greenpeace has taken on a broad spectrum of environmental issues including toxic waste, nuclear weapons and energy, commercial whaling, deforestation, air pollution, and GMO's. They use direct action, civil disobedience, governmental lobbying, and public awareness campaigns to try to effect conservationist legislation and industrial practices.[287]

Earth First!

(No compromise in defense of mother earth)

As V. Vale describes in his interview with Mike Roselle in ***RE****search Magazine*,

[286] Rex Weyler, *Greenpeace, How a Group of Ecologists, Journalists, and Visionaries Changed the World.* (New Milford : Holtzbrinck Publishers, 2004).
[287] http://www.greenpeace.org/usa/en/campaigns/history/ (Accessed September, 2013).

> "Globally, the "environmental movement" has been a grim joke, especially in the face of continuing statistics such as: every minute 100 acres of tropical rain forests disappear; an estimated 17,500 plant and animal species become extinct each year. Forests of 1000-year-old trees are still being plundered, unpublicized, and without effective resistance. Earth First! is the first American group to reportedly *do whatever it takes* to halt corporate rapine in its tracks."[288]

According to Roselle, Earth First! appeals to people who are frustrated with by the fact that the mainstream environmental movement doesn't go far enough to challenge society. Many of the larger conservation groups, (Non-Governmental Organizations) such as the Arbor Day Foundation, Nature Conservancy, are seen by some affiliates of Earth First! as being too willing to compromise on tactics and strategies. In 1979 he, Dave Foreman, Howie Wolke, Bart Koehler, and Ron Kezar, inspired by Rachel Carson, Aldo Leopold, Edward Abby, and others, formed Earth First! around the slogan: no Compromise in Defense of Mother Earth![289]

Initially they also drew inspiration from Greenpeace who already was engaged in stunts and pranks of various kinds to get their message out (specifically around the whaling industry in which the USSR was still involved at that time). According to Roselle, the images of tiny inflatable boats taking on large Russian factory ships, and drawing harpoon fire away from cetaceans, captured imaginations across the county and created a very effective media spectacle for the anti-whaling campaign.[290] Thus Earth

[288] V. Vale in "Pranks*", REsearch Magazine* vol 11. (1987).
[289] See the approach of Catherine M. Roach in *Mother/Nature: Popular Culture and the Environmental Ethics*. (Bloomington : Indiana University Press, 2003).
[290] Paul Kevin Wapner, *Environmental Activism and World Civic Politics*. (Albany : SUNY Press, 1996).

First! members felt that there were many ways to use the media, if one understood what they were looking for, and created exciting actions and images to draw their attention.

In an early action by Earth First! and a variety of other groups on behalf of the Spotted Owl (and the old growth forests on which they depended), a press conference was called prior to one of their meetings, but when a reporter for the paper arrived there were only people sitting at a table talking about the issues.[291] A small story ran in the back pages with no photograph, prompting a representative from the Wilderness Society to complain that there wasn't enough interest and that they would never be able to get the issue on the front page, and that the only effective course of action would be to work with legislators.

"That was on Sunday. By Tuesday morning we had occupied the Cathedral Forest. We had people hanging on branches 80 feet up, with a huge banner that said, "Give a Hoot – Save the Spotted Owl!" The story got on the front page. – You give them something different and they actually get excited about working on the story. They do a better job".[292]

According to Roselle, the media are sometimes free to do a better job with environmental issues than with foreign policy. Many reporters do not have a vested interest in the corporate development end, they may be less actively involved in steering public opinion driven policies, and may be harder to intimidate. When Earth First! would go into logging towns to protest old growth cutting and clear-cutting around watersheds,

[291] The story is told in William Dietrich, *Final Forest: Big Trees, Forks, and the Pacific Northwest*. (New York : Simon & Schuster, 1992), 80.
[292] See note 158.

they encountered a great deal of hostility from loggers and police, but the local journalists were not timber employees, nor did the timber industry advertise in their papers or on their TV stations.[293] Earth First! also made use of the media's appetite for controversy in staging some of its actions. "If we sit down in front of a bulldozer on Bald Mountain road, the next week the TV station receives a thousand letters".[294]

"***Smokey the Bear***"

In 1985 the Forest Service in Corvallis, Oregon rented a large auditorium for an informational celebration of the birthday of Smokey the Bear (America's forest fire awareness and safety mascot). Someone from Earth First! heard that the Forest Service had ruined their Smokey the Bear costume in the wash and didn't have one to use for the celebration. Roselle had one and wore it into the auditorium, along with a few other Earth First! members. They had printed up leaflets for the three hundred elementary school children in attendance stating that trees were ten times as likely to be killed by logging as by forest fires.[295]

As Roselle describes it, he was in a sea of kids, passing out fliers when one of the rangers from the Forest Service approached him and asked him to leave. Roselle refused,

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[293] See thee description of this in Douglas Rushkoff, *Media Virus: Hidden Agendas in Popular Culture.* (New York : Ballantine Books, 1994).
[294] The stories have become legendary about these encounters. See Martha Frances Lee, *Earth First: Environmental Apocalypse*. (Syracuse : University Press. 1995),172.
[295] The drama of that day is captured in an account in *Drama Review*. Vol 46, Issues 1-2. 2002 p. 126.

stating that it was his birthday, and he wasn't going anywhere. Finally a sheriff's department ranger approached him and tried to push him out of the room.

> "Meanwhile the kids think it's really cool – the ranger and Smokey! Finally he said, "Well I'm going to have to put you under arrest". I said, "That's going to be really great –arresting Smokey the Bear at his own party". When he realized that I *wanted* him to arrest me, he hesitated. Then he tried to tear my head off! But he tried to do it in such a way that the kids didn't get too freaked out. We had this struggle going on that was subtly violent – I said through gritted teeth, "Look you're going to tear this costume", and he hissed, "Well that's ok". Finally he pulled it off and said, "Look kids, he's not a real Smokey", and I said, "Hey kids, he's not a real ranger" and grabbed his flat-brimmed hat and threw it across the room like a Frisbee. …At this point a bunch of people from our group came over to me, and a bunch of rangers came over to him, and they pulled us apart". [296]

The next morning the incident was on the front page of the Corvallis paper. The Forest Service had widely publicized the party to give them the opportunity to warn children not to play with matches, though, according to Earth First! loggers start more fires than children.

> "This was one of my favorite actions because it was a monkey wrench of *their* media. The Forest Service has a budget of god knows how much to work with all these civic groups and timber industry organizations. They have this whole machine that tries to make the community supportive of what they are doing. But half a dozen people and a bear costume can turn that machine against them. I like stunts where *you* don't have to call the media – *they* call the media and all you have to do is show up".

[296] See Note 158.

Occupy

Occupy Wall Street began in September 2011. The term "occupy" can be traced to an article in Yes Magazine.[297] However, the issues and grievances that it addressed had been fomenting for many years due to the environmental and economic policies of the Bush Administration, the wars in Iraq and Afghanistan, and the mortgage driven economic collapse beginning in 2006.[298] Occupy quickly spread across the US, concurrent with encampments and massive demonstrations across Europe, largely in response to recession-driven austerity policies. Yes Men and Reverend Billy were active, visible supporters of OWS.[299]

Occupy Sebastopol

Occupy Oakland began a month later and emerged as the largest and most active Bay Area hub along with San Francisco.[300] Occupy Santa Rosa was the first Sonoma County encampment beginning in October, 2011.[301] Two weeks later a dozen people, including myself, started Occupy Sebastopol. Though the movement has experienced

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[297] http://www.yesmagazine.org/for-teachers/curriculum/curriculum-resources-occupy-wall-street (Accessed November, 2013).
[298] Assessments are now appearing in print such as *The Great Recession: Market Failure or Policy Failure?* By Robert Hetzel. (Cambridge : University Press, 2012).
[299] Wj Reichartz, *Purpose Beyond 2012: The Wisconsin Idea, Occupy Wall Street and Democracy's Future.* (Philadelphia : Xlibris, 2012), 298.
[300] Occupy Oakland is discussed in *Occupy: Dissecting Occupy Wall Street.* Danny Schecter, (Georgetown, Ontario : Cosimo Books, 2012),136.
[301] *readersupportednews.org/news.../318.../7939-occupy-santa-rosa-californ...* (Accessed August, 2013).

various transitions, the *general assemblies* continue to the present day. Most members of the current city council self-identify as being politically progressive, which probably accounts for the fact that we were able to secure an official endorsement from them within several months of pitching the tents.[302] There was some compromise involved, however, the endorsement was in exchange for replacing sleeping accommodations with a single informational tent. When that tent was taken down in April 2012 it had been the longest continually standing Occupy tent in the US. Its removal was in exchange for a city sponsored (permanent) circle of benches honoring the ongoing assemblies and their direct participation in city politics. (See Figure 4-4 Occupy Santa Rosa and Figure 4-5 Marches Against Monsanto).

[302] beyourgovernment.org/groups/occupy-sebastopol/ (Accessed November, 2013).

Figure 4-4

Occupy Demonstrations
Santa Rosa, Ca
2012

Figure 4-5

March Against Monsanto
Santa Rosa, Ca

2012 - 2013

While the Occupy Movement has been too loose knit to be seen as monolithic, it is credited by many with "changing the political dialogue" in US politics.[303] Its influences would be difficult to quantify, but were visible in the 2012 presidential election in the US, where terms like "vulture capitalism" and discussions of economic disparities might otherwise have been less prominent.[304]

At the outset of the movement, however, there were some who felt that environmental issues were pushed aside in favor of a concentration on economic considerations.[305] Among those who objected to the de-emphasis on environmentalism were some Native American groups, along with tribal leaders and spokespeople like Morningstar Gali, who also took issue with the term "occupy" as being disrespectful of First Nation Peoples, and contended that the encampments were already on occupied land.[306] There was a move at Occupy Oakland to change the name to "Decolonize Oakland", which they were not able to pass through the general assembly.[307] Occupy Portland (Oregon) voted for the renaming to "Decolonize", but it was never "formally"

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[303] A discussion by the founders of the Occupy Movement. Kate Khatib, Margaret Killjoy, Mike McQuire, *We Are Many: Reflections on Movement Strategy from Occupation to Liberation.* (Oakland : AK Press, 2012)
[304] John Nichols and Robert W. McChesney. *Dollarocracy: How the Money and Media Election Complex is Destroying America.* (New York : Nation Books, 2013).
[305] The battle of ecology and economics is seen in Kalle Lasu and Darren Fleet, *Meme Wars: The Creative Destruction of Neo-classical Economics.* (New York : Seven Stories Press, 2012).
[306] See the comments in a context in *Culture Social Class and* Race *in Public Relations: Perspectives and Applications* edited by Damion Waymer. (Plymouth : Lexington Books, 2012),166.
[307] Amy Schrager Lang and Daniel Lang/Levitsky, *Dreaming in Public: Building the Occupy Movement.* (Oxford : New International Publishers, 2012), 173.

adopted.[308] This prompted a number of splinter groups such as "Decolonize the 99%" which have remained involved in the larger Occupy groups and the issues they address, but profess to different emphases. [309] (See Figure 4-6 Occupy/Idle No More Sebastopol)

Idle No More

Idle No More as a specific movement probably shares some of its impetus with the Occupy Movements, having taken its name in 2012, but is largely comprised of Indigenous peoples and their supporters, with a more visibly environmental focus.[310] Idle No More began in Canada, and, along with broader concerns about governmental respect for Indigenous rights and treaties, its current focus in on the proposed Keystone XL pipeline which is planned to increase the production of petroleum from the Alberta Tar Sands. Protests against the Keystone XL, the exploitation of which is described by NASA scientist James Hansen as "game over for the climate," have mobilized tens of

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[308] Rene Guariello Heath, Courtney Vail Fletcher, and Ricardo Munoz (eds) *Understanding Occupy from Wall Street to Portland: Applied Studies in Communication and Theory*. (Plymouth : Lexington Books, 2013). John Nichols and Robert W. McChesney. *Dollarocracy: How the Money and Media Election Complex is Destroying America.* (New York : Nation Books, 2013).

[308] The battle of ecology and economics is seen in Kalle Lasu and Darren Fleet, *Meme Wars: The Creative Destruction of Neo-classical Economics.* (New York : Seven Stories Press, 2012).

[308] See the comments in a context in *Culture Social Class and* Race *in Public Relations: Perspectives and Applications* edited by Damion Waymer. (Plymouth : Lexington Books, 2012),166.

[308] Amy Schrager Lang and Daniel Lang/Levitsky, *Dreaming in Public: Building the Occupy Movement.* (Oxford : New International Publishers, 2012), 173.

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309 Discussion of the 99% groups in Ron Shiffman (ed.) Beyond Zuccotti Park: Freedom of Assembly and the Occupation of Public Space. (Oakland : New Village Press, 2012).

310 Eve Tuck and Y. Wayne Yang (eds) Youth Resistance: Research and theories of change (Abingdon : Routledge, 2014).

thousands of people in numerous other groups across Canada and the US.[311] Those involved with the resisting construction of the Keystone XL Pipeline now include Tarsands Action, 350.org, Greenpeace, Wild Idaho Rising Tide, Friends of the Earth, the Sierra Club, as well as agricultural organizations and farmers who rely on the Oglala

311 http://www.nytimes.com/2012/05/10/opinion/game-over-for-the-climate.html?_r=0 (Accessed December, 2013)

Figure 4-6

Occupy/Decolonize Sebastopol

2011 - Present

Aquifer that the pipeline proposes to cross.[312] However, it is Indigenous groups such as Idle No More, the Indigenous Environmental Network, Athabascan Chipewyan First Nation, and Cree First Nation groups, that are at the forefront of the effort to stop the Keystone Pipeline, as some of their tribal lands are in the vicinity of the Alberta Tar Sands deposits, and in the path of the proposed pipeline.[313]

Tim DeChristopher

In 2007 outgoing U.S. president George W. Bush rushed through an opening of Bureau of Land Management (BLM) lands for oil and gas leases, including 150,00 acres in Southern Utah that were considered by many environmentalists to be adjacent to environmentally sensitive areas.[314] In December of 2008 Tim DeChristopher attended the

312 http://tarsandsaction.org/
https://secure3.convio.net/gpeace/site/Advocacy?cmd=display&page=UserAction&id=1335
http://wildidahorisingtide.org/
http://www.foe.org/projects/climate-and-energy/tar-sands/keystone-xl-pipeline
http://www.huffingtonpost.com/2013/06/11/keystone-xl-lawsuit-sierra-club-state-department_n_3422849.html
http://www.omaha.com/article/20130919/NEWS/130918498
http://insideclimatenews.org/breaking-news/20131108/texas-farmers-legal-battle-against-keystone-pipeline-set-heat
http://allagainstthehaul.org/blog/view/farmers-and-ranchers-along-the-keystone-xl-call-for-action-in-light-of-yell (Accessed November, 2013).

313 http://articles.washingtonpost.com/2012-09-17/business/35496877_1_keystone-xl-tribes-tribal-lands
http://www.ienearth.org/what-we-do/tar-sands/
http://www.idlenomore.ca/ (Accessed December, 2013).

314 http://www.commondreams.org/news2008/0529-18.htm
(Accessed August, 2013)

> "The vast acreage under lease and huge increase in drilling permits contradicts the Interior Departments assertions that it has inadequate access to federal lands. On May 21, 2008, the Bureau of Land Management released EPCA III, its latest inventory of oil and gas resources on more than 279 million acres of federal land. In the report, BLM emphasized the amount of oil and gas resources off limit to development. But another Wilderness Society analysis shows that the report manipulated data and was rife with errors.

auction for 116 parcels of the Utah lands as a protester with the intention of disrupting it in some fashion, but not with a clear idea of what he would do. According to DeChristopher, the BLM had postponed the auction in order to add additional parcels, and the sale of drilling rights was illegal because the Bush administration had not done any of the requisite studies about environmental impact. This was confirmed by Secretary of the Interior Ken Salazar in October, 2009 when he reversed all but 17 of the 77 Utah leases that were auctioned.[315] Upon entering the building DeChristopher was asked if he was there to bid and was given a bidding card to hold up during the auction for parcels that he wanted.

DeChristopher stated that his inspiration for being there came from James Hansen (350.org), and Bill McKibben, as well as a background in studying various philosophies of ecology. As to his actions at the auction, he quoted Annie Dillard in saying that "sometimes you just have to jump first and build your wings on the way down". During the auction DeChristopher bid on and won fourteen parcels (22,500 acres) worth nearly two million dollars, which he had no intention of buying, but with the idea that they would be unavailable for oil extraction, at least temporarily. This prompted a charge by

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> As they did with the 2006 version of this report, the Bush administration and BLM again manipulated data to reach a predetermined conclusion that supports the oil and gas industry's desire to open more public lands to drilling, said Nada Culver of The Wilderness Society's BLM Action Center. This time, however, they have gone through even greater gyrations in an attempt to create data that supports their position, including defining as impediments such basic values as keeping our water and air clean, ensuring wildlife can survive, and protecting treasured wild lands".

[315] New York Times, October, 2009. http://articles.latimes.com/2009/oct/09/nation/na-utah-leases
(Accessed November, 2013).
"Interior Secretary Ken Salazar said that only 17 of 77 oil and gas leases on Utah public lands that the Bush administration auctioned off in December were valid and that his agency would prevent development on the remaining parcels, at least in the near future."

the U.S. Attorney's office of violation of the Federal Onshore Oil and Gas Leasing Reform Act, and for making false statements. DeChristopher plead not guilty to the charges during his trial, but stated that at the time of the auction he assumed he was breaking the law in some way and expected there to be charges.[316]

Part of what is interesting about DeChristopher's case is that it did not begin with the intention of being performance art, but took on more theatrical aspects over time. This was due in part to the frustrations of DeChristopher and his supporters during the nearly two years leading up to the trial (in which it was postponed nine times), and what they saw as political partisanship on the part of the court. According to an editorial piece in The Progressive by Terry Tempest Williams:

"It was a shattering display of politics on the bench, beginning with jury selection. The judge delivered a lengthy lecture on the importance of impartiality, after which he said to the entire jury pool, "And there should be no discussion between you and the 'kumbaya' crowd in the courtroom."

"I realized sitting through this painful display of partisanship day after day, where Tim was repeatedly silenced and the defense consistently overruled, that the only proper way to convey the trial proceedings would be to act out the transcript as though it were satirical theater." [317]

In response to the proceedings of the trial, and of what was perceived as the ongoing failure of the U.S. Government to respond to the challenges of climate change,

316 Bidder 70. http://www.bidder70.org/ (Accessed November, 2013).
317 Terry Tempest Williams, http://progressive.org/tim_dechristopher_conviction_williams.html

DeChristopher and other collaborators began Peaceful Uprising.[318] In addition to petitioning, and demonstrating for the address of environmental issues, Peaceful Uprising also began a parallel mock trial as street theater, publicly dramatizing what DeChristopher was prohibited from saying in the courtroom, and what the presiding judge ruled as inadmissible.[319]

In July 2011 DeChristopher was sentenced to two years in federal prison of which he served twenty-one months. His conviction sparked protest actions in which twenty-six of his supporters were arrested. An article in Rolling Stone by Jeff Goodell referred to DeChristopher as "America's most creative climate criminal."[320] He was an Utne Reader "Visionary" in 2011, and was one of 16 candidates for the Salt Lake Tribune's "Utahan of the Year." [321] He is also a saint in the Church of Stop Shopping.[322]

318 http://www.peacefuluprising.org/ (Accessed November, 2013). (Defending a living future through empowering non-violent action).
319 Judge Dee V. Benson ruled that DeChristopher's motivations for the action were inadmissible. He also instructed the jury not to take into consideration the illegality of the sales that DeChristopher disrupted, which by the time of the trial had been mostly nullified by the Department of the Interior for the same reasons that DeChristopher attempted to cite in his defense.
320 Goodell, Jeff. http://www.rollingstone.com/politics/blogs/national-affairs/jailed-climate-hero-tim-dechristopher-thrown-in-the-hole-20120328
(Accessed, November, 2013).
321 http://www.utne.com/environment/utne-reader-visionaries-tim-dechristopher-disobedient-green.aspx#axzz2hw4qycr4 (Accessed, August, 2013).
322 http://www.revbilly.com/ (Accessed, November, 2013.

Chapter Five

Soils and Interventions

Soils and Art Interventions

The following chapter on *Soils and Art Interventions* describes some of the ways in which artists have responded to ecological concerns, and specifically environmental degradation. Particular attention will be paid to those artists whose work is at least partially activist by character, thus distinguishing it as *environmentalist* art (specifying its role within the broader genre of environmental art, or land art) as mentioned in chapters one and two. As stated, the *environmentalist* designation is not given to suggest that distinctions are always clear, or that environmental/land art necessarily lacks powers of conservationist advocacy. However, because it would exceed the scope of this dissertation to describe a comprehensive history of environmental and environmentalist art projects, it has been necessary to be selective in which artists to bring forward.

Those artists whose work is mentioned in this chapter have been selected for several primary reasons, such as that their work is currently visible as a form of environmental activism that can be shown to have had a measurable (or demonstrable) impact on society, especially if it relates to issues of soil. Additionally, as mentioned in the previous chapter on *Soils and Ecology*, the research has looked at activists and activist groups whose work is not generally considered to be "art" by intention, but which has had a demonstrable impact on artists, or which may have begun to blur distinctions between art practice and political activism. Further, the research has paid particular

attention to artists whose methods and tactics have been especially influential upon the work that my collaborators and I have generated in recent years, or with whom we have worked directly. Additional environmental and environmentalist artists have been mentioned throughout the dissertation where their work intersected the topic of discussion. For example Liz Christy's *Seed Grenade* and Kathryn Miller's *Seed Bombing* projects were mentioned along side our own (inspired by those of ecologist Masanobu Fukuoka) in the previous chapter. Where seed bombs are mentioned again in this chapter in discussing *Futurefarmers* I do not necessarily bring Christy and Miller forward again for the sake of itemization. Most prominently among other artists mentioned are those whose public work uses humor, pranks, and guerilla tactics to convey a conservationist message or accomplish a direct action.

Environmental activist groups have been using theatrics, stunts, pranks, and public exhibits, both formal and guerilla, for many years. It would be difficult to identify a particular point of origin for environmentalism taking artistic turns, but, as described in chapter four, environmentalist groups began to understand and utilize theatrics, props, and media spectacle at least as far back as the early 1970's. The term "environmental art" encompasses a wide range of practices and sensibilities. Among its concerns, as described by the *Green Museum* are:

> It informs and interprets nature and its processes, or educates us about environmental problems. It is concerned with environmental forces and materials, creating artworks affected or powered by wind, water, lightning, even earthquakes. It re-envisions our relationship to nature, proposing new

> ways for us to co-exist with our environment. It reclaims and remediates damaged environments, restoring ecosystems in artistic and often aesthetic ways.[323]

As Clive Adams points out:

> At times of turbulent change in our history, as in Hellenistic Greece, medieval Japan and Europe at the time of industrial and political revolution, new art forms have evolved in order to address the changing relationships between nature and society.
>
> During the political and social upheavals of the 1960's, a group of artists in the United States and Europe increasingly questioned the restriction of painting and experimented with radical new ways of responding to the environment and its ecology. Rather than paint the landscape, their experiences were realized by sculpting the land itself, by photographic sequences and in sculpture made from natural materials. [324]

This chapter will describe some of the findings of the research with regard specifically to artist's activist oriented responses to ecological and environmental issues. It will also include descriptions of the collaborative work that has accompanied, inspired, and resulted from the research into ecology, soils, and established (and emerging) artistic responses thereto. It is noteworthy that the research and practices undertaken for this dissertation have been particularly focused on environmental issues (specifically with regard to soils) where the data indicates that current industrial and agricultural practices are proving to be unsustainable. Therefore, as with the individual work that my

[323] http://greenmuseum.org/what_is_ea.php (Viewed 07/01/15).
[324] Adams, Clive. *Love, Labour, Loss: 300 years of British livestock farming in art.* London: Tullie House Museum and Art Gallery, 2002. (71).

collaborators and I have generated recently, this chapter focuses on artwork that addresses perceived problems.

The concerns and tactics of engaging with environmental problems may be part of what distinguishes environmentalist art practice from "land art", although lines between them may be blurry or sometimes non-existent.[325] This is mentioned here to account for the fact that land art, such as projects "working in collaboration with nature"[326] that have been made out of an interest in the aesthetics of natural objects, have not been given as much attention in selecting exemplary projects. However, this is not to claim that such projects are not of value in the pursuit of ecological study and conservation. Some of the work mentioned in descriptions of the Five Looking West projects fits more closely with descriptions of land related art rather than environmental activism.[327] The cultivation of cooperative relationships and intimacy with ecosystems and their materials may underpin and develop conservationist sensibilities. However, the number of artists and projects detailed in a dissertation is limited, and in the face of current environmental data, and calls by scientists to address their causes, the research has remained more focused on interventions as "emergency measures."

As will be seen, much of this work is responsive to environmental degradation, whether perceived directly or informed by data. According to critics who would

[325] Kastner, Jeff. *Land and Environmental Art*. Oxford: Phaidon Press, 2010.
[326] Goldsworthy, Andy. *A Collaboration with Nature*. New York: H.N. Abrams, 1990.
[327] *www.piedmontcenterforthearts.org/12.html* (Viewed 12/13/14).

downplay the importance of such ecological data (and perhaps some practitioners),[328] this can make it "reactionary" in the sense that it is attempting to intervene against perceived problems or crises.[329] Practitioners may view these interventionist attempts as potentially accomplishing some form of remediation.[330] They may block actions temporarily or permanently by individuals or corporations that are perceived as detrimental to the environment. They may create temporary or long-term solutions to hardships or perceived ecological problems that may have been lacking attention by others. Or, they may be aimed at raising public awareness about issues sufficiently to sway public sentiment in the direction of altered behaviors, or demanding altered practices on the part of governmental or corporate institutions. However, as Vandana Shiva stated, when I had the opportunity to question her briefly about "next moves" she reiterated that community building needed to be central to cultivating better relationships with dirt,[331] and that this involves evolutionary as well as revolutionary projects. In other words, when artwork that attempts to help stop bad practice in its tracks is collaborative, this may be may be among the most effective ways to achieve both.[332]

Those projects mentioned here have been selected because they have addressed issues in environmentalism that may not have previously gained a great deal of attention

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[328] One statement from differing perspective is Lomborg, Bjorn. *The Skeptical Environmentalist: Measuring the Real State of the World.* Cambridge: University Press. 2001.
[329] Hobbs, R. J. et.al. "Intervention Ecology: Applying Ecological Science in the 21st Century" *Bio-Science 61, 442-50.*
[330] Van Andel, Jelte and James Aronson, (eds). *Restoring Ecology: The New Frontier*. Oxford: Wiley, 2012.
[331] She has returned to this theme many times in her published works, as in *Earth Democracy: Justice, Sustainability and Peace.* Cambridge: South End Press. 2005. (21). Here she states: "The very notion of the commons implies a resource is owned managed, and used by the community."
[332] The move toward collaboration and "community" is echoed by Milani, Brian in *Designing the Green Economy: The Postindustrial Alternative to Corporate Globilization*. Oxford: Rowland & Littlefield, 2000. (86).

in the art world.[333] Some have been selected particularly because of their address of soils.[334] Others may not appear to be explicitly environmentalist, but are included because their tactics, or individual stunts, have been influential to us and others, especially if they have afforded us an opportunity to work collaboratively with them in some form or other. In the case of the Yes Men, they are presented as exemplary here because of the impact that their tactics are shown to have. They are also given particular attention because of the emergence of the Yes Lab, which may offer a highly comprehensive and effective platform (method) for organizing collaborations in the future.[335]

Because of the emphasis on transdisciplinary approaches described in this dissertation there has been influence and inspiration drawn from work by Betty Beaumont, Georg Dietzler, and others who will be mentioned in this chapter. Beaumont describes her work as engaging with the environment as a whole, acknowledging its physical, social,

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[333] Wainwright, Heather Lee. "*New Paradigms in Aesthetics: The Challenge of Environmental Art*" University of Minnesota: Dissertation, 2006. She describes the restoration of the Leonhardt Fair Park Lagoon, a collaboration of the Dallas Museum of Fine Arts and Patricia Johanson, a sculptor. Her large pieces in the lagoon create micro-ecosystems. Land art designed to be animal habitats is also found in the work of Will Becker (AKA "willowman") www.treehugger.com/culture/will-beckers-willowman-artist-weaves-willow-sculptures.html (Viewed 07/03/13).

(Author Note: This is stated with the understanding that I am not an art historian, and despite the extensive research that has gone into this dissertation, the projects included are not intended to pose as originators or necessarily of paramount significance with regard to the issues that they address.)

[334] The issues connected to soil are crucial and widespread. See Warkentin, Benno P. (ed). *Petroleum Contaminated Soils: Remediation Techniques* 2. Chelsea, Michigan: Lewis Publications, 1989.

[335] *www.yeslab.org/* (Viewed 12/11/13). They have the goal of " helping progressive organizations and activists carry out media-getting creative actions around well-considered goals". These efforts are becoming part of the literature of main-stream presses as in the reports on Yes Men in Edwards, Gemma. *Social Movements and Protest*. Cambridge: University Press, 2014. (168).

For a report on some of my own previous work in this area, see Bertha, Michelle, Beverly Crawford, Edward Fogarty, Tirza Latimer. *The impact of Globalization on the United States: Culture and Society* (*Art on the Borderline*. Westport: Greenwood Publications, 2008. (180). Also see my listing in *Who's Who in Research (Visual Arts)* Art Praxis. Bristol: Intellect Books, 2013.

economic, political, and spiritual interrelations in an all-encompassing manner.[336] As she states:

> I believe the future is created by the quality of the present and that art can contribute to the making of a different future, that the societal role of art is to explore the potential within ecological, political and economic landscapes whether they form ideas (mental landscapes), or physical terrain (in the real world) and/or virtual environments (in cyberspace).[337]

Of particular interest to the work in this dissertation is her project titled *Teddy Bear Island* (1973), both as a seminal environmental piece, as a work with a focus on loss of soil ecosystems, and as an underwater piece (connecting it to the *Listening to Animalities, Soils, and Shipwrecks* and *Jeju Island* pieces mentioned in chapter six). In the piece, Beaumont rimmed a small island with a plastic cable in West Hill Pond, Connecticut that had been submerged by the building of a dam in order to create a reservoir. The thousand foot long cable became a representation for an umbilical cord, as Beaumont said in *Changing Landscapes; Art in an Expanded Field*, symbolically "re-connecting the land to its original environment"[338] and also subtly playing with the fluidities of geographic demarcations (i.e., where does an island begin or end?). The cable was placed at a depth of fifteen feet, consciously or otherwise indicating that, as was mentioned in chapter three *Soils and Agriculture*, mud submerged below six feet in water ceases to be considered soil.

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[336] http://beaumontstudio.com/ (Viewed 06/11/15).
[337] http://greenmuseum.org/content/artist_index/artist_id-37.html (Viewed 06/11/15).
[338] Beaumont, Betty and Marilu Knode. *Changing Landscapes; Art in an Expanded Field.* Rochdale, England: Rochdale Art Gallery, 1989.

Another artist of interest to my research has been Bonnie Ora Sherk, whose transdisciplinary gardening projects have combined landscape restoration, food production, project-based education, and technology. Her work in San Francisco began with portable gardens and green spaces installed on freeway overpasses, such as the Oak Street Overpass in 1970, and have continued to garner news attention since then. Her urban-scale ("life-scale") restoration work *The Farm* is referred to by alivinglibrary.org as a LIFE FRAME, a seven acre living landscape developed out of a series of urban vacant lots next to a freeway overpass in San Francisco.[339] The project brought together ecologically restorative and social artwork, attracting people from different disciplines and cultures, including other species (plants, animals, and insects). During the six years that The Farm was at that particular location (1974 - 1980) it sought to remain a dynamic, interactive learning space with workshops, internships, and an animal habitat referred to as the *Raw Egg Animal Theater*.[340] Sherk also developed a K-12 curriculum around the educational activities of the space which is still available on her website. *The Farm* has since become a city park, and in subsequent years (up until 2010) the *Living Libraries* have continued to be placed in parks, urban riparian areas, and freeway "voids" throughout San Francisco, and have included installations in New York as well.

From a transdisciplinary perspective the research also looked with interest at the work of Georg Dietzler, specifically his piece "*Self-Decomposing Laboratory*" (1999). The piece consisted of an indoor experiment in growing Oyster Mushrooms on polychlorinated biphonyls (PCB) contaminated dirt in order to observe their ability to

[339] http://www.alivinglibrary.org/LivLib_home.html (Viewed 12/13/14).
[340] http://www.alivinglibrary.org/BookII/Page-c.jpg (Viewed 07/01/15).

neutralize the toxicity of the contaminating chemicals. Previous experimental art pieces such as *Observation of Oyster Mushrooms* (1995-1996), and *Observation of Oyster Mushrooms II* (1998) were concurrent with pioneering work in bioremediation and mycoremediation by Paul Stamets and S. A. Thomas.[341] As described in *Mycelium Running (How Mushrooms Can Help Save the World)*, Oyster Mushrooms and other fungi have been shown to be highly successful at neutralizing the toxicity of environmental contaminants such as petroleum, PCB's, and even chemical warfare agents such as sarin.[342] Dietzler describes himself as a socio-political artist working in experimental media and in collaboration with scientists to create biotechnological environments and interactive sculptures. His work demonstrates a critical intersection between arts and sciences towards a blending of these disciplines, and interest shared by our work as well. Chapter six mentions the *Healdsburg High Altitude Balloon* project that we have begun in collaboration with the Stamets *LifeBox* project, and through which we have been in contact with Stamets and his company Fungi Perfecti while pursuing these projects.[343]

The research has also looked at, and drawn some inspiration from the work of Jerilea Zempel. Jerilea is an artist and art activist based mostly in New York whose public installations (ephemeral public art) combine satire and humorous repurposing, as well as addressing feminist and ecological concerns. Although her work incorporates a wide range of materials and broaches a broad range of topics, her mock monuments and

[341] https://en.wikipedia.org/wiki/Mycoremediation (Viewed 06/01/15).
[342] Stamets, Paul. *Mycelium Running*. Berkeley: 10 Speed Press, 2005.
[343] http://www.fungi.com/ (Viewed 12/06/14).
http://www.sustainablebrands.com/digital_learning/event-video/life-box-plantable-packaging-assisted-fungi-paul-stamets (Viewed 07/01/15).

manure-based sculptures have been of particular interest for this dissertation. Among her best-known works are *Excess Volatility* (a branch covered Volkswagen, NY '89), *Peace Dividend* (a pine-needle covered artillery gun, Canterbury, UK '90), and *Guns and Rosettes* (Posnan, Poland, '95-98).[344] John Grande referred to her as the "Princess of Manure" in reference to her ephemeral (biodegradable) sculptures made from horse dung.

> A couple of years ago I was invited to do something at Art Omi in Hudson, New York in a huge open field. There were at least ten artists and myself and we all had to do something in the field. We were like animals in a farm. We had to coexist in this pasture. And most of us felt compelled to do it because we wanted a showing opportunity. We needed the field, but did the field need us? I decided I wanted to give something back to the nature that had to endure what a bunch of sculptors were about to do to it. I wanted to do something with the field that didn't change it in any way. Most of the other artists clawed up the field, put in concrete footings, leaving their mark on the field in some way that couldn't ever be erased. I wanted to do something silently, …and I came up with the idea that this field could use some fertilizer. Why not make a sculpture out of horse manure and let it dissolve?[345]

There is also an echo here from Daniel McCormick's statement in a Daily Californian interview where he states: "I like to do work and see it work. I don't need a monument."[346] Zempel states that her first effort started out small, since it was a small show, and she "didn't have her shit technology together." She turned to the modern masters to find an image best suited to be redone in manure and found that she was

[344] Grande, John K. *Art Nature Dialogues: Interviews with Environmental Artists.* Albany: SUNY Press, 2004. (33).
[345] Ibid. 34.
[346] Karlamangla, Soumya. "Eco Friendly Artist Breaks the Mold." Berkeley: Daily Californian, Monday, January 31, 2011.

encountering mostly naked female bodies, which is where the feminist side came in. "How could I pay them back for the endless stream of naked girls?" She decided on Brancusi's *Kiss* and made it to the small, original dimensions, installing it under a tree with a little (quiet) garden around it, while "most of the other artists were attempting to be as big and splashy as possible."[347]

Ironically, however, her first dung work didn't dissolve very quickly, and lasted longer than some of the other pieces in the show that were vulnerable to wind and rain. It was actually broken apart by hand several seasons afterward. In discussing the work, Zempel mentioned that dung is an important building material in parts of the developing world where it is hot and dry, though sod and mud houses exists in wetter climates as well. This brings to mind Vandana Shiva's discussion about dung plastering in some traditional Indian houses,[348] as well as modern construction practitioners who are incorporating horse dung into contemporary practice, such as The Natural Builders in El Cerrito, California.[349]

Following the field show, Zempel decided to work her way through the modern masters using manure. When she was invited to do an installation at the Stone Quarry Hill Park in Cazenovia, New York, she decided that Henry Moore deserved some attention because he had done so many naked women,[350] which is where she got the idea

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[347] *wegway.com/index.../jerilea-zempel-in-conversation-with-john-grande/* (Viewed 12/03/13).
[348] Shiva, Vandana. *Stolen Harvest: The Hijacking of the Global Food Supply*. Cambridge: South End Press, 2000. (58).
[349] http://www.naturalbuilding.com/ (Viewed 12/11/13).
[350] Piché, Thomas. *Sculpture Space (The Book).* Utica: Munson-Williams-Proctor Institute, Museum of Art, 2007. (92).

to make reclining female figures such as *Lady Vanishes* (Ontario, 2002). Additional layers of the Henry Moore knock-offs are, according to Zempel, that he appropriated some of the stylistic innovations of Barbara Hepworth's pierced stonework, and that his reclining nude was directly lifted from a Mayan temple sculpture.[351] It was in looking at inter- and intra-cultural hierarchies that she got the idea of beginning to make the mock monuments.

> Monuments are a class of sculpture that publicly commemorate important events or grand persons, usually war or military heroes. They represent some of the shared values of a culture. It's hard to know today what we share, so the idea of a monument is a tough one. That's where I got the idea of a "mock monument."[352]

In addition to satirizing the machismo of many formal monuments (covering displays of military equipment, "dinosaurs of militaristic nationalism" with "tea-cozies" as with *Guns and Rosettes* '95-98) there is also an environmentalist theme that runs through many of them. The branch covered VW (*Excess Volatility* '89) and the artillery gun cocooned in pine-needles (*Peace Dividend* '90) present a humorous juxtaposition between the mechanical objects and the natural materials used to repurpose them, but also may reflect a bio-mimicry impulse that Grande describes as a permacultural sensibility.[353]

While the "monuments" that we have begun to install, such as the *Listening to Materialities, Yosemite Valley*, (Figure 5-1) were not directly inspired by Zempel, they

[351] Op. cit. Grande, 41.
[352] Op. cit. Grande, 35.
[353] Op. cit. Grande, 38.

Figure 5-1

Listening to Materialities
Yosemite Valley Installation
Arizona Sandstone and Redwood

2013

are satirizing some of the underlying conventions of monument installations and their content. Our installations are "mock" in that they are unofficial, guerilla installations as opposed to being invited. However they also would like to play with some of the

conventions of monumental (commemorative) plaques, many of which in the US pay tribute to those who have had the greatest impact on the surrounding land. In some cases they are for conservationists such as John Muir, whereas in many other cases, they are for military figure who were at the vanguard of westward expansion.

"Culture jamming"

Culture jamming is a term coined by the band Negativland in their 1984 album *JamCon 84.*[354] Their precursors include Dada,[355] some of the Surrealists,[356] Abby Hoffman,[357] The Merry Pranksters,[358] and John Heartfield.[359] It has roots in the Situationist International and their idea of radio jamming, (pirating a radio frequency on public airways and using it to broadcast), which they adopted in 1968 as a way to use guerilla communication within mass media.[360] Culture jamming is loosely defined as anarchistic, interventionist subversions that are meant to call attention to social, ecological, or economic issues, disrupt patterns and practices, and get messages out in to the public. It often uses *memes* as satire and has included mass movements such as *Buy*

[354] Lysloff, Rene T. A. and Leslie C. Gay, *Music and Technoculture.* Middletown: Wesleyan University Press, 2003. (361). An analysis is given in Coyer, Kate, Tony Dowmunt, and Alan Fountain. *The Alternative Media Handbook.* Abingdon: Routledge, 2007. (167).
[355] Kuenzli, Rudolf. *Dada* Oxford: Phaidon Press, 2011.
[356] A relevant discussion can be found in Klingsöhr-Leroy, Catherine and Uta Grosenick. Köln: Taschen, 2004.
[357] Hoffman, Abbie. *Revolution for the Hell of It*. New York: Avalon, 2005. Hoffman has some interesting introductions appraising his career.
[358] Lawlor, William. *Beat Culture: Lifestyles, Icons, and Impact*. Santa Barbara: ABC-CLIO. 2005. (113). gives historical context for them.
[359] MacLeod, Catriona, and Charlotte Schroell-Glass. *Elective Affinities: Testing Word and Image Relationships.* Amsterdam: Ropongi, 2009.
[360] See note 23.

Nothing Day and other anti-consumerist actions. These often use public advertising platforms (billboards) as media, known as "subvertising."[361]

> A well produced 'subvert' mimics the look and feel of a targeted ad, promoting the classic double-take as viewers suddenly realize they have been duped. Subverts create cognitive dissonance. It cuts through the hype and glitz of our mediated reality and, momentarily, reveals a deeper truth within.[362]

Examples of culture jamming include *Le Collectif Des 62*[363], (a group that some of my previous work directly supported) who were "bombing" (graffiti writing) billboards in the Paris subway between 2003 and 2004. The group was claiming what they referred to as a "right of reply" and "resistance to aggressive advertising." According to "Robert Johnson," the group's spokesman, "I found that the advertisements were speaking to me, so I started speaking back." Johnson and sixty-one other "Robert Johnsons"[364] were "randomly" and "arbitrarily" arrested (according to them) and charged with doing a million Euros worth of damage to RATP and Metrobus property. Public media had reported on some of the billboard defacement and some members of the group were identified by postings on the Stopub Website.[365]

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361 Harold, Christine. *OurSpace: Resisting the Corporate Control of Culture.* Minneapolis: University of Minnesota Press, 2007. (34).

362 www.wow.com/Adbusters+Magazine (Viewed 12/13/13). See a discussion of the issue in David Bell's collection: Bell, David, et. al., *Cyperculture: the Key Concept*. London: Routledge, 2004. (31). Also cited in Parry, Bill, et. al. (eds) *Cultural Hijack: Rethinking Intervention*. Liverpool: University Press, 2011. (29).

363 lecollectifdes62.free.fr (Viewed 12/13/13).

364 Robert Johnson was a popular blues singer from the US who expatriated to Paris in the 1950's. Because of another Johnson (Ray) who is considered by some to be the father of mail art I continue to use "Robert Johnson" as a pseudonym for mailings.

365 Doherty, Brian, and Timothy Doyle. *Beyond Borders: Environmental Movements and Transnational Politics.* Abingdon: Routledge, 2008. (139).

Other examples include the work of Jack Nappier (John Law) and Jack Mangrum of the Billboard Liberation Front, which has been operating since 1977.[366] Their work involved often very sophisticated alterations of billboards and even electric signs. They were both "outed" after decades of working, but pledged to continue. Nappier's book *Trespass (A History of Un-commissioned Urban Art)* was published by City Lights Books in San Francisco in 2011.[367]

Ron English ("the celebrated prankster father of dollar-pop")[368] is another well-known culture-jammer who uses photo-real painting and collage to alter advertisements, corporate logos, and mascots. He was interviewed in the 2004 movie *Super Size Me* as a result of his extralegal McDonald's logo rearrangements. He worked along side Banksy and Swoon on their mural on the Separation Wall between Israel and Palestine.[369]

Culture jamming has been used to raise environmental awareness as well, and recently has gone more main-stream in response to climate change. Large-scale projects such as Energy Union and Project Genie are gaining considerable exposure, and claim inspiration from culture jamming as an effective way to get messages out to the public.[370]

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366 Lee, Monie and Carla Johnson. *Principles of Advertising: A Global Perspective*, Second Edition, Binghampton NY: Haworth Press, 2005. (195).
367 Nappier, Jack and Ethel Seno (eds). *Trespass: A History of Un-commissioned Urban Art*. San Francisco: City Lights. 2011.
368 www.operagallery.com/ang/artist/index/bio/art/145/ (Viewed 12/06/14).
369 Perry, Willaim. *Against the Wall: The Art of Resistance in Palestine*. Chicago: Lawrence Hill Books, 2011. (10). It is worth noting here that I learned from Banksy: "If you want to be invisible in public all you need is a clipboard, a hard hat, and a reflective vest." (See Yosemite Valley Listening Installation, figure 5-1).
370 *events.ucl.ac.uk* › Events Home › All Events (Viewed 03/12/15). This is an announcement of a program dealing with these.

Negativland

Negativland started in the late 1970's as a high school band/art project with Mark Hosler, Richard Lyons, David Wills ("The Weatherman"), Peter Dayton, Joan, Chris Grigg, and Ian Allen in the San Francisco Bay Area suburbs (Concord). Later it included Peter Conheim, Tim Maloney, Jonathan Land, Tom Koch, and others referred to as "Stukke and Stakke."[371] The projects of Negativland appropriate and satirize mainstream media, using radio jamming, and other forms of disruption have influenced our work over the years as well.

While not always overtly concerned with ecology, *Negativland* has been actively engaged with critiquing and satirizing various elements of what they consider to be the suburban, commercial status quo, and its responses to a broad range of political issues, including the environment. Commenting on "peak oil", Richard Heinberg has referred to the suburbs as perhaps "the greatest misallocation of resources in history." [372] As a result of their Concord (East Bay suburb) experiences, the cultural attributes of the suburbs are central to many of Negativland's projects. Their work includes satirical pieces on suburban neighborhoods that double as gun resorts, and camping with satellite TV experiences gone awry due to insects. It is not so much the themes of their pieces, or

[371] Herman, Andrew and Thomas Swiss. *Worldwide Web and Contemporary Cultural Theory*. New York: Routledge, 2000. (198).
[372] See citations to his comments in Murphy, Eugene and Pat Murphy, *Plan C: Community Survival Strategies for Peak Oil and Climate Change*. Gabiola Island: New Society Publishers, 2008. (275). Other references in " The End of Suburbia." http://www.endofsuburbia.com/ (Viewed 11/03/13), " The Post Carbon Institute." http://www.postcarbon.org/# (Viewed 11/03/13).

their appropriationist practices that have influenced our work over the years, but their tactics of mockery and using absurdity to challenge various cultural conventions.

From the beginning, and during the last thirty years of creating visual and sound pieces, their work has been as much about illegal collage, appropriation, "plunderphonics," and Burroughs and Gysin's cut-up method, as about conventional exhibition and music. Much of their exposure has come from being sued by U2's label (Island) and by SST Records with whom they had recorded two records and the single that prompted the U2 suit.[373] However, prior to that, their record *Escape From Noise* (1987) had had some popularity, and they were being pressured to do a live tour that they couldn't finance.

Their response was to issue a fake press release from the FBI claiming that their song *Christianity is Stupid* was implicated in a murder case involving a boy named David Brom, who had argued with his father and then subsequently killed his entire family with an axe. Negativland reported that its tour had been cancelled due to their being asked to stay in town to cooperate with the investigation. David had in fact argued with his father prior to his rampage, but it was not over the Negativland song. However, the news media picked up the story without fact checking, and Negativland became associated with the murders.[374] Their next record, *Helter Stupid* featured Dave McElhatton from KPIX (5)

[373] The story was told in the release of an album and a book *Negativland, Fair Use: The Story of the Letter U and the Numeral 2*. Seeland-Negativland, 1995.
[374] Kitty, Alexander. *Don't Believe It: How Lies Become News*. New York: Disinformation Press, 2005.

News on the cover with the caption about their association with the murder incident.[375] While characterized as callous by both supporters and critics, the stunt brought them national exposure and became a source of embarrassment for the news station that had run the story without doing any background checks. However, as Jacques Servin (Yes Men) states, the need for good stories will probably continue to guarantee at least some room for play in most any news outlet.

Negativland has also been active in projects addressing "fair use" and ant-copyright activism. While again not explicitly environmentalist in nature, these efforts relate directly to the ability of artists to incorporate published material into their work, a potentially important feature of interventionism and the satire that it frequently employs. Some of our projects have also incorporated impersonation, which may be illegal in certain circumstances, and has been covered in attempts to strengthen copyright laws in the direction of greater generality and more stringent enforcement.

Suburban Drains

Part of the *Listening to the Merced River* Project (*Zeppelin-Animalities*, chapter six) involved placing a physical marker of NAS Moffett Field (superfund) dirt at a strategic spot outside of Yosemite Valley, and then sprinkling a small amount in the water to follow its course to the Pacific. The Merced joins the San Joaquin River delta

[375] Bogdanov, Vladimir. (ed). *All Music Guide to Electronica: The Definitive Guide to Electronic Music.* San Francisco: Backbest Books, 2001. (354).

flowing past Concord and Antioch as it joins the San Francisco Bay.[376] Because of Concord being in the San Joaquin watershed, and with its reference to Negativland's portrayal (as the quintessential suburb), we chose Concord as the next location for the *Listening to the Merced River* documentations (see figure 5-2). It also became the

[376] See efforts to preserve the nature of the Merced River in *Merced Wild and Scenic River Management Plan: Final.* (United States Bureau of Land Management: Bakersfield District, 1991). (41).

location for the *Suburban Drain* installations in 2013.[377]

Figure 5-2

Listening to the Merced River
(Concord, Ca)

2013

[377] Harris, Joel A. *Concord*. San Francisco: Arcadia Publishing , 2009.

The *Suburban Drain* was inspired by a visit to San Ramon,[378] a neighboring town of Concord, and the observation of what appeared to be a not uncommon example of Saturday ablutions in the yard by one of its residents. As we watched the yard work being done, we observed three different internal combustion engines being employed to cut, trim, and clean a yard measuring no more than twenty-five feet by fifteen feet. These included a fully seated riding mower, a gas powered edger, a gas powered leaf blower, and added to these was an electric hedge trimmer. Following the yard cleaning, the neighbor then came out and added herbicide along the cracks in the driveway and sidewalk, and finished by generously spraying (something) along the base of the house. As we watched the process, we noticed that the storm drain nearby had small (6" x 5"), quiet warning sign with a picture of a salmon and a "drains to bay" label, which are common in California (see figure 5-2).[379] Due to the significant impact that such practices have on soils and waterways, as well a pollinator populations and air-quality, the idea arose that something more noticeable might be called for.

In the fall of 2013 we began looking for ideal locations, starting with "American Beauty Drive" in Concord. The installation there included a coiled straw rain swale to provide (limited) filtration, a row of sandbags to channel water to the swale, and two safety sawhorses, with a flashing warning light. The sawhorses were marked with "City of Concord," "caution," "drains to bay," and were placed on either side of the swale covering the storm drain. During the installation I wore a tie, a reflective vest, and a

[378] San Ramon was once a rich farming area with 3000 acres in the Norris Farm. Lane, Beverly and Ralph Cozine. *San Ramon Valley: Alamo, Danville, and San Ramon.* San Francisco: Arcadia Publishing, 2005. (114). It is also the suburban town that my collaborator, Frederick Young, grew up in.
[379] Thomas, Sarah V. *Water Pollution Issues and Developments*. New York: Nova Publications, 2008.

hardhat, which was helpful when the neighbors came out to ask what we were doing. My response was that the drain was being "worked on." The outfit seemed to make that statement sufficient at first, but as more neighbors came out and gathered into a conversational group across the street, we left (see figures 5-3 and 5-4 *Suburban Drains*).

Figure 5-3

Suburban Drain
(Listening to the Merced River)
Concord, Ca

2013

Figure 5-4

Suburban Drain
(Listening to the Merced River)
Concord, Ca

2013

Part of the idea behind the *Suburban Drains* is simply to turn up the volume of warning signs that are already ubiquitous throughout the Bay Area. Some of them include the wording "no dumping", and thus a potential implication is that they refer only

to wanton pouring of discarded motor oil in sufficient quantities to incur a fine. Residents may miss that the signs can also refer to what seeps and washes off of private yards as a result of petroleum and chemical based grooming habits.[380] Thus, as the installations continue, we will be looking for ways to incorporate some other form of informational campaign through various performance tactics.

On the subject of straw swales our research has also looked with interest at the work of David McCormick (mentioned earlier in the chapter) who produces beautifully done, large-scale woven swale pieces, often made from site-specific materials. The works have been exhibited in galleries, but are then taken back to their original site (many in Marin County, California), and (re)-installed, where after they root or disintegrate back into the riparian soils.[381] The swales, or barriers have also been used as erosion abatement pieces in non-riparian environments, as with the Arroyo Seco pieces in Pasadena, California under a freeway overpass. The erosion barriers in such installations serve the double purpose of inhibiting erosion and helping to clean the heavily contaminated water that runs off of roadways. As the environmental scientist Martin Kammerer has stated about his work:

> You can't replicate what was there in the historic flood plane, but you can recreate parts of the environment. The good thing about McCormick's sculpture is that it doesn't change nature, it just helps it along. In this case he created a small structure that replicates the function of a natural stream bank levee encouraging gradual deposition of sediments behind it. When the wall develops

[380] Novotny, Vladamir. *Non Point Pollution and Urban Storm-water Management*. (Water Quality Library no. 9). Lancaster, Pennsylvania: Technomic Publishing, 1995) (26).
[381] http://www.arroyoseco.org/watershedsculptures.htm (Viewed 06/11/15).

> new growth from the riparian plants woven in, it will sustain itself for years to come and it will produce a lasting floodplain behind it that is structurally identical to a natural one.[382]

In connection with Russian Riverkeeper in Healdsburg, my students and I have also been working on rainwater gardens (swales) on the Healdsburg High campus, as well as smaller storm-drain swales and barriers for the last several years. The rainwater gardens have been carefully landscaped, but for a variety of reasons the storm-drain barriers have been fairly utilitarian. Partly inspired by McCormick's work, we now have plans for much more sculptural applications, including the ceramic identification plaques for the fall of 2015.

The section that follows documents some of the work of the group Yes Men and pays particular attention to their activities. While the Yes Men's activities do not always appear overtly concerned with the plight of soils, the activities of the corporations that they target do directly and indirectly impact the health of soils and ecosystems. The policies and antics of corporations that they have targeted such as Monsanto, Dow, the WTO, Chevron, etc., are significant ecological drivers of global environmental degradation, including that of soils. Particular attention is paid to them here because they have served as among the primary sources of motivation for the research and practice that has gone into this dissertation; and because my collaborators and myself are participants in the Yes Lab organization that they have set up as a facilitating template for artist-activists to continue interventionist practice.

[382] Ibid. (Martin Kammerer). (Viewed 06/11/15).

The Yes Men is an interventionist, "culture jamming" group comprised of its two creators Jacques Servin ("Andy Bichlbaum") and Igor Vamos ("Mike Bonanno"), along with a few other full time members including Whitney Black and Rocco Ferrer, and a network of thousands of supporter/participants (including myself) who now make up the Yes Lab.[383] Vamos is a professor of media in the Department of Arts at Rensselaer Polytechnic Institute in New York. Servin is an author and performance artist who first became well known for having inserted images of men kissing in the Maxis computer game SimCopter.[384] They describe themselves as a genderless, loose knit, collaboration group that agrees their way into conferences and public events in order to satirize them. Stating that "sometimes it takes a lie to expose the truth." They then go in as imposters in order to mock corporations through what they refer to as "identity correction" (identifying corporate criminality), and consequently raise public awareness about critical social and environmental issues, especially with regard to what they see as corporate misconduct. [385] As described by Lucy Lippard in *Weather Report (Art and Climate Change):*

> The Yes Men are a group who use any means necessary to agree their way into the fortified compounds of commerce and then smuggle out the stories of their undercover escapades to provide a public glimpse at the behind-the-scenes world of big business. The stories are often both shocking and hilarious. Author Naomi Klein called them "the Jonathan Swift of the Jackass

[383] See Miller, Jared A. "*The Yes Men: The Role of Parody in Anti-globalist Rhetoric*." Long Beach, California State University: Thesis, 2006.
[384] http://www.thebacklot.com/whatever-happened-to-the-man-behind-simcopters-gay-easter-egg/06/2007/ (Viewed 07/01/15).
[385] A further description of their strategies is found in Lievrouw, Leah. *Alternative and Activist New Media*. Cambridge: Polity Books, 2011. (9).

generation." The Yes Men have impersonated World Trade Organization, Dow Chemical Corporation and Bush administration spokesmen on television and at business conferences around the world. They do this in order to demonstrate some of the mechanisms that keep bad people and ideas in power."[386]

Vamos and Servin were introduced through RTMark, an anti-consumerist corporation that sponsors interventionist pranks by bringing activist-artists and donors together. RTMark was involved with Servin's SimCopter project, and sponsored Igor Vamos' Barbie Liberation Organization project. The BLO was launched by Vamos and a few others in 1993 as an attack on what they perceived to be the Barbie Doll's negative gender stereotyping. The action, referred to as "*shopgiving*," involved buying Barbie and GI Joe dolls, switching their voice boxes, and returning them to the shelves for resale. The action was accompanied by press releases by Vamos claiming that as many as five hundred dolls had been altered.[387]

Servin and Vamos's collaboration as the Yes Men began by setting up a fake website that was designed to mimic and spoof that of the World Trade Organization. To their surprise, the site was confused with the official WTO site, and they were invited as representatives to a conference in Austria. Following this, they have continued with the model of setting up phony websites, attending as corporate imposters, and then giving presentations full of outrageous, shocking statements that are meant to satirize the ideological positions underpinning business models and behaviors of powerful

[386] Lippard, Lucy R. *Weather Report (Art and Climate Change).* Colorado: Boulder Museum of Contemporary Art, 2007. (118).
[387] Downing, John H. et. al. *Encyclopedia of Social Movement Media*. London: Sage, 2011. (68).

corporations. Their presentations often involve the use of elaborate props or costumes such as survival suits, which are designed to mock equipment designed for real world situations. At the Salzburg conference they presented the WTO's new website *Vote-Auction.com*, where people could voluntarily sell their votes to anyone who wanted to purchase them online, however, no one seemed to notice that it was a spoof. "The most shocking thing about it was how little shock was registered by the audience. You would expect outrage, instead we got nodding heads." So, according to Servin, "our goal has been to keep pushing further in order to make the positions of the WTO *really* clear."

In July, 2001 the Yes Men's phony General Agreement on Tariffs and Trade website (GATT.org) received a request from CNBC's *Market-Wrap* for a WTO representative to appear on the show and debate an anti-globalization activist. [388] According to the invitation it would probably be with Naomi Klein, a prominent critic of the WTO's free-market and social austerity policies. Klein has written extensively on WTO trade agreements, which she believes have been environmentally, economically, and socially damaging to countries whose governments have entered into them. Her views may be summarized in the following article excerpt in which she describes neo-liberal privatization efforts (global free-trade) as a "form of war," which is worth quoting at length:

> On Monday, seven anti-privatisation activists were arrested in Soweto for blocking the installation of prepaid water meters. The meters are a privatised answer to the fact that millions of South

[388] WTO official website and criticism: http://www.wto.org/ (Viewed 12/31/13). For a discussion of the implications see Katz, Linda S. *Evolution in Reference and Information Services: Impact of the Internet*. Binghamton: Haworth Information Press, 2013.

> Africans cannot pay their water bills. The new gadgets work like pay-as-you-go mobile phones, only instead of having a dead phone when you run out of money you have dead people, sickened by cholera-infested water.
>
> On the day South Africa's "water warriors" were locked up, Argentina's negotiations with the International Monetary Fund bogged down. The sticking point was rate hikes for privatised utility companies. In a country where 50% of the people live in poverty, the IMF is demanding that multinational water and electricity companies be allowed to increase their rates by a staggering 30%. At trade summits, debates about privatisation seem wonkish. On the ground, they are as clear and urgent as the right to survive.
>
> After September 11, right-wing pundits couldn't bury the globalisation movement fast enough. In times of war, they said, no one would care about frivolous issues like water privatisation. Much of the anti-war movement fell into a related trap: now was not the time to focus on divisive economic debates, but to come together to call for peace.
>
> This nonsense ended in Cancun this week, when thousands of activists converged to declare that the brutal economic model advanced by the WTO is itself a form of war. War because privatisation and deregulation kill - by pushing up prices on necessities like water and medicines, and pushing down prices on raw commodities like coffee, making small farms unsustainable…" [389]

As it was, however, Klein was unable to participate, so CNBC invited Barry Coates from the World Development Movement along with another guest from a large international consulting firm.[390] Posing as "Granwyth Hulatberi" from the WTO, Servin went on CNBC's Marketwrap Europe and debated Coates by explaining what the WTO had in mind for their opponents.

[389] *The Nation*. vol 277, September 29, 2003. (10).
[390] www.wdm.org.uk (Viewed 01/11/14). The import of this group is discussed in Baker, Barry. *World Development: An Essential Text*. Oxford: New International Press, 2011.

> With privatized education, your children won't think the way you do. They will understand why free trade is good, and they will honor great thinkers like Darwin and Milton Friedman instead of Robespierre and Abbie Hoffman. Yes, there are dire reports of growing poverty in the world, but protesters don't understand the theories well enough. Markets are still the answer, no matter what the cost. For example, a market in human rights violations can allow countries that want to abuse people to buy "Justice Vouchers" from those who don't. Might makes right. The rich are right because they have power, and the poor are wrong because they don't.

Days later the producer sent "Hulatberi" a videotape of the debate along with a friendly note, and no indication that the network suspected anything wrong.[391] The humor and intended shock value of their hoaxes is meant to make the political positions of corporations more glaring, bring to light issues of importance, and garner media attention. Their hoaxes and statements made while impersonating corporate representatives have frequently resulted in false news reports, perhaps the most famous being when Servin went on the BBC News and announced that Dow Chemical was liquidating Union Carbide in order to compensate victims of the 1984 Bhopal disaster.[392] This statement caused Dow's stock value to drop by two billion dollars on the German Stock Exchange overnight. Bhopal was also the event that prompted Vandana Shiva to leave her work in quantum physics and devote her career entirely to ecological activism.

Following the CNBC appearance, they were invited through the GATT.org website to give the keynote address at the *Textiles of the Future* conference in Tampere,

[391] Corby, Tom. (ed). *Network Art Practices and Positions,* Innovations in Art and Design. New York: Routledge, 2011. (175). This important text gives an account of the hoax.
[392] Sandin, Jennifer A. and Peter McLaren. *Critical Pedagogies of Consumption: Living and Learning in the Shadow of Shopacalypse*. New York: Routledge, 2010. (237). This book discusses this event in detail.

Finland.[393] During the speech titled *Beyond the Golden Parachute,* Servin ripped off his business suit to show the gold leisure apparel underneath, with a large inflatable phallus as the armature for a video monitor. His presentation was focused on "leaving the slave at home," since there, the slave can be free, and therefore simply acts as remote labor. He went on to say that if the market had been allowed to run its course, the American Civil War would have been unnecessary, since slavery would have evolved towards the transnational format. Commerce would become increasingly concerned with keeping a close report with distant workers. Thus, using devices like the Employee Visual Appendage (and body sensors implanted humanely in employees), managers could keep track of workers, while still finding balance in their lives between monitoring around the clock productivity and leisure. During the presentation no one reacted openly, prompting Vamos to ask, "what can't corporations get away with?" The presentation garnered a full page spread in a Finnish newspaper, as well as articles in Harpers and Fortune Magazines, which, according to Vamos, began to get worrisome because of all the publicity. However, there has only been one reported appearance in which they were recognized and removed by security before getting on stage.[394]

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[393] Described in part by Giannachi, Gabriella. *Politics of the New Media Theatre: Life TM*. Abingdon: Routledge, 2007. (31).

[394] Nomai, Afsheen Joseph. *Culture Jamming: Ideological Struggle and the Possibilities for Social Change*. UMI Dissertation Publications, 2011. (86).

The **General Agreement on Tariffs and Trade** (**GATT**) was a multilateral agreement regulating international trade. According to its preamble, its purpose was the "substantial reduction of tariffs and other trade barriers and the elimination of preferences, on a reciprocal and mutually advantageous basis." It was negotiated during the United Nations Conference on Trade and Employment and was the outcome of the failure of negotiating governments to create the International Trade Organization (ITO). GATT was signed in 1947 and lasted until 1994, when it was replaced by the World Trade Organization in 1995. The original GATT text (GATT 1947) is still in effect under the WTO framework, subject to the modifications of GATT 1994.

Given the corporate propensity for suing people who challenge them or engage in any form of copyright violations (not to mention causing quantifiable monetary losses), it is surprising that the Yes Men hoaxes have not resulted in severe action by those they have impersonated. As discussed in chapter four, Tim Dechristopher's jail sentence for outbidding Chevron at a public land auction is but one example of the risks that such stunts can involve.[395] In the wake of the BBC appearance, Vamos stated that they had no idea what Dow would do in response. As it was however, there was no reaction from Dow other than a public denial. Apparently Dow wanted the matter hushed and forgotten as quickly as possible, or may have thought that Vamos and Servin would be effectively vilified when the announcement came to light as a prank.

The embarrassment experienced by corporations who have to retract the impersonated statements of responsibility has resulted in an ongoing reluctance to accept the publicity that would arise from legal trials, and this has become part of the Yes Men strategy. At one point they were sued by the US Chamber of Commerce, but it was dropped when the Electronic Frontier Foundation stepped in to defend them.[396] They are credited with being instrumental in completely derailing Chevron's major (and expensive), "We agree" campaign by the Rainforest Action Network.[397] Some of the large corporations that they have targeted are concerned about their actions, and in

[395] *www.huffingtonpost.com/tag/tim-dechristopher/2* (Viewed 11/11/13).
www.peacefuluprising.org/tim-dechristopher/tims-story (Viewed 11/11/13).
[396] https://www.eff.org/cases/chamber-commerce-v-servin (11/15/13).
[397] http://ran.org/ran-yes-men-punkd-chevron (Viewed 11/11/13).

February, 2012, it came to light that the private corporate security agency, Stratfor was being paid by Dow to monitor the Yes Men activities.[398]

For reasons similar to those of this dissertation's special focus on the Yes Men, the research has also paid particular attention to Reverend Billy and the Church of Stop Shopping. My introduction to their work was somewhat concurrent with deciding to commit my research and practice to environmental issues, and coming to understand their inextricability from those of social justice. While not all of Reverend Billy's work is directly environmentalist, it is done with the understanding that the shifted attitudes and practice that need accompany better treatment of ecosystems are directly related to attitudes and practices towards communities. At the same time, the highly public work that the Church of Stop Shopping has done while trying to stop Appalachian mountain-top removal for coal mining operations in the US is directly related to the health of soil ecosystems in those regions.

Reverend Billy is a character created by Bill Talen in collaboration with Reverend Sidney Lanier (Vicar of St. Clements, Hells Kitchen, NY). Lanier was an avant-garde theater enthusiast who had been removed from his post at St. Thomas (5th Avenue) following a spontaneous rant against the money-changers to its wealthy parishioners.[399] After being "demoted" to St. Clements Episcopal, he allowed the church to double as a theater space, where Talen was living and working as stage manager when he began

[398] http://www.democracynow.org/2012/2/28/wikileaks_private_spies_stratfor_helped_dow (Viewed 12/3/13).
[399] Mac Phee, Josh and Erik Roland. *Realizing the Impossible: Art Against Authority*. Oakland: AK Press, 2007.

creating the character of Reverend Billy in the late 1990's. Talen describes the character as part performance art, part southern preacher, with a dose of Lenny Bruce ("right wing threads, left wing mouth")[400], not a spoof, however, but a "real preacher."

He began by going to the front of the Disney Store on Times Square with a tape recorder and a portable alter, and preaching against sweatshop capitalism, as well as what he saw to be the erosion of community oriented neighborhoods in New York. Despite the fact that he was only one of many Times Square preachers, his performances quickly attracted attention and a small following of collaborators who were willing to join in by kneeling, chanting, or taking the pulpit and speaking. [401]

> Something about what I was doing would attract facts. People were plopping research about sweatshops and Disney on my pulpit. But they seemed uneasy about it. They would look at me quizzically, wondering about the right-wing costume. I would smile at them and gesture to them to come closer, then they would freeze. When I bellowed my best "Mickey Mouse is the anti-Christ!" they would take back their fact sheets and edge away nervously.[402]

The character was also incorporated into the classes that Talen was teaching at New York University, which began to involve frequent student collaborations, whose first targets were the Disney Store and Starbucks. Their performances were frequent, noisy, and confrontational enough with store managers and police to attract a variety of

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[400] www.multinationalmonitor.org/mm2008/072008/interview-talen.html (Viewed 12/1/13).
[401] Talen, Bill. *What Would Jesus Buy? Reverend Billy's Fabulous Prayers in the Face of Shopocalypse,* Cambridge MA: Perseus Books, 2006. (4).
Gautney, Heather et. al. (ed). *Democracy, State and the struggle for Global Justice.* Abingdon: Routledge. 2009, (278).
[402] A*rticles.latimes.com ›* Collections (Viewed 12/1/13).

media attention. The title of his first book, *What Should I Do if Reverend Billy is in My Store?,*[403] refers to an internal memo sent out to Starbucks stores throughout the New York metropolitan area in 2000:

April 24, 2000

"Reverend" Billy preaches anti-corporate sentiments in NYC Starbucks locations

The Village Voice recently published an article (April 19-25, 2000) titled "Rage Against the Caffeine" which highlighted Reverend Billy's efforts to wage a campaign against large corporations...particularly Starbucks. According to the article, Reverend Billy announced a summer campaign in which he'll preach in all Manhattan Starbucks. Over the past five months, "Reverend" Billy and some of his devotees have entered a few New York City Starbucks locations.

Reverend Billy sits quietly at a table with devotees and then begins to chat up the customers. He works the crowd with an affirming theme but gradually turns on Starbucks. Towards the end, he's shouting. Then the Reverend's devotees hand around anti-Starbucks leaflets. After that, he heads out the door. According to a store manager, he may stand on your tables.

What should I do if Reverend Billy is in my store?

1. Treat him as any other customer and do not respond to his or his devotees antics.
2. Ask him politely to leave the store.
3. Call the police if he does not leave.
4. Page your district manager and marketing..(deleted)

[403] Talen, Bill. *What Should I do if Reverend Bill is in My Store*. New York: New Press, 2005.

Question & Answer

Who is Reverend Billy?

The creation of actor Bill Talen, Reverend Billy began preaching the anti-consumerist gospel in the Times Square Disney Store three years ago. He wears a while dinner jacket over a black T-shirt and a priest's collar.

What does he say about Starbucks?

Reverend Billy says that our store's "earth-tone touchy-feeliness masks corporate ruthlessness." The leaflets that he hands out say that Starbucks is screwing the planet, the farmers, the Baristas and New York's neighborhoods.

What should I do if he comes in my store?

Do not answer any questions. Nothing is off record.

Refer all media inquiries to ...(deleted)

How do I respond to my customers if they ask how I feel about Reverend Billy's comments?

Starbucks has achieved success one cup at a time, one store at a time. We started as a small business in Seattle's Pike Place market more than 28 years ago. Since then, each one of our stores has become a unique part of its neighborhood. Our stores are about people. The customers and partners (employees) at each location give the store its own personality and atmosphere..."[404]

Talen accuses Starbucks of displacing independent cafes around the world, citing examples of Starbucks that are literally across the street from each other in some urban locations.[405] He has also commented frequently on Starbucks labor practices, which he

[404] "Reproduced from an internal memorandum circulated by Starbucks Seattle head office to all NYC branches, handed to me after a show by an ex-Starbucks employee."
Talen, Bill. *What Should I do if Reverend Billy is in my store?* New York: New Press, Norton, 2003. (III).
[405] Guzman, Monica. "The Big Blog" Seattle PI.
http://blog.seattlepi.com/thebigblog/2009/09/18/three-starbucks-on-one-houston-corner/

sees as being strongly anti-union.[406] He also accuses Starbucks of green-washing their image as an excuse for price gouging, while conducting environmentally damaging practices behind the scenes.[407]

In a coincidental action done in 2008, my students and I bought a number of bottles of Ethos Water from Starbucks at nearly $3.00 per bottle (a nickel per bottle of which goes to their humanitarian water projects), and used it to paint the steps of the California State Capital building in Sacramento with mud made from Mexican dirt prior to conducting interviews with state legislators (as mentioned in chapter two). The Reverend Billy approach to engaging with these issues is to go into the stores, alone, or with collaborators (sometimes planted ahead), perform exorcisms on cash registers, beseech or heckle customers, and refuse to leave until the police arrive. Afterward, they will usually regroup on the public sidewalk in front of the store to preach and stage musical performances, which include full gospel choirs.

The addition of the full choir to Reverend Billy's performances in 1999 established the *Church of Stop Shopping*, which describes itself as a "radical performance community" which currently includes fifty performing members and thousands of "congregation" members.

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http://www.chron.com/business/article/One-on-corner-there-are-3-places-to-get-your-1745816.php
http://blogs.dallasobserver.com/cityofate/2013/03/java_wars_starbucks_sets_up_fr.php (Viewed 11/30/13).

[406] Herbst, Moira. "*Starbucks' Union Blues*." New York: *Bloomberg Business Week*, December 30, 2008). http://www.businessweek.com/stories/2008-12-30/starbucks-union -blues (Viewed 08/10/13).

[407] Philip, Victor. *Starbucks Wasting More Than Six Million Gallons of Water a Day*. The Sun/ABC News, October 6, 2008.
http://abcnews.go.com/International/SmartHome/story?id=5964908 (Viewed 08/15/13).

They are wild anti-consumerist gospel shouters, earth loving urban activists who have worked with communities on 4 continents defending land, life and imagination from reckless development and the extractive imperatives of global capital. They employ multiple tactics and creative strategies, including cash register exorcisms, retail interventions, cell phone operas combined with grass roots organizing and media activism. They are entertainers and artists, performing regularly throughout The US and Europe.[408]

We are a post religious church. We hold "services" wherever we can, in concert halls, theaters, churches, community centers, forests, fields, parking lots, mall atriums, and perhaps most importantly, inside stores, as close to the cash register as we can get, within spitting distance of the point of purchase.

We sing, we dance, we preach, sometimes we perform small "interventions," invisible plays, acts of ritual resistance. We exorcise cash registers and re-mythologize the retail environment, we illuminate the Devil. We make media and send it out around the world. We get hassled by security guards and sometimes get arrested.

Above all we try to "complexify" the moment of purchase, to snap people out their hypnosis and back into the mystery of being human. We remind people that things come from somewhere, that products have a resource past, a labor past. Someone made It, and It is made of something, we trace the route a product took to get on the shelf, the life it might have when we throw it away. We animate the objects that surround us and in so doing we re-animate ourselves. We become citizens again. [409]

One of the main points of focus of the Church of Stop Shopping is localization. It aligns itself with aspects of permaculture such as the creation and support of community

[408] The Church Of Stop Shopping: http://www.revbilly.com/ (Viewed 10/30/13).
[409] Ibid.

gardens, community development projects, slow food, and slow money. As described in chapter four, the decentralization of food production and efforts towards local, sustainable economies may be among the most important aspects of sustainable practice with regard to soils, and the environment at large. While "localization" at large may not be in itself a guarantee of permaculturally oriented thinking and action, it can offer the possibility of greater stability (food security), resiliency (diversification of resource management), and potentially greater self-determination among community stakeholders. This is also in line with Transition-Town programs, also mentioned in chapter four.

Mountaintop removal

In 2010, Reverend Billy and the Choir carried hundreds of pounds of dirt from Appalachian (West Virginia) coal mining tailings ("murdered mud"), and built a mountain in the lobby of the Chase Manhattan Bank at 2nd Ave. and 10th Street in Manhattan. This was described as "bringing the mountain back to Chase." Placed on top was a letter to Chase CEO Jamie Dimond, urging him to divest from Peabody Coal, Alfa Natural Resources, Arch, CONSOL, and other companies that were engaged in mountaintop removal.[410] At that time Chase Manhattan Bank was among the largest underwriters of such coal mining practices in the Appalachian region. The construction of the mountain was accompanied by the choir's performance of the *Mountaintop Anthem*

[410] http://www.revbilly.com/campaigns/end-mountaintop-removal
http://ran.org/sites/default/files/ran_mtrcompaniestoavoid_2012.pdf. (Viewed 11/12/13).
An appraisal is found in climatechangepsychology.blogspot.com/.../climate-activist-reverend-billy (Viewed 11/12/13).

and a 'sermon from the mountain.' When asked to remove it, they refused and left before the police arrived.

According to David Orr, throughout the world we are destroying soils in pursuit of the raw materials underneath them that we consider to be more valuable:

> Mountains are literally being leveled in the name of cheap electricity that isn't cheap at all. The coal companies are being allowed to remove what they call "overburden", creating boulder fields with no water tables that can support little or no vegetation. Meanwhile all the heavy metals underneath are free to leach out into streams and aquifers. [411] Appalachia, a region of extraordinary beauty and natural diversity is under attack. *Mountaintop removal is strip mining on steroids*—a radically destructive form of surface mining whereby coal companies bulldoze the forest, decapitate the peaks with explosives, push the shattered rubble into adjacent valleys, and destroy the ecologically crucial headwater streams that had been there before. This is an ecological and human tragedy of epic proportions—and yet few Americans realize how the coal industry, seeking maximum profit and abetted by lax government regulation, is turning an entire region into an undeclared national energy sacrifice zone.[412]

> Why is this happening? The companies and the politicians they buy say this is about jobs and economic survival. That is a lie. Removing mountaintops, forests, and polluting water with heavy metals and acid employs relatively few and destroys the basis for a better and sustainable economy, forever. [413]

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[411] Orr, David. *Down to the Wire: Confronting Climate Collapse.* Oxford: University Press, 2009. (117).
Orr, David. http://www.ohvec.org/newsletters/woc_2005_09/article_19.htm(Viewed 08/10/13).
[412] David Orr, David. *Earth in Mind: On Education, Environment and the Human Prospect.* Washington, D.C.: Island Press, 2004. provides the framework for his concerns.
Orr, David. http://www.plunderingappalachia.org/ (Viewed 08/13/13).
[413] Ibid.

Partially as a result of Reverend Billy's efforts, in tandem with other environmentalist groups, Chase agreed to divest from underwriting mountaintop removal operations in later that same year.[414] After managing bonds worth hundreds of millions of dollars for MTR coal operations, bank officials agreed at their annual shareholder meeting to stop underwriting mountaintop removal in 2010. Environmentalist organizations such as Rainforest Action Network, and the Sierra Club joined citizen's groups such as Alliance for Appalachia engaged in tree-sitting, road-blocking, and invading bank lobbies. Rainforest Action Network pressured the bank from within by buying shares and agitating at shareholder meetings. However, other banks such as UBS (Switzerland) quickly filled in Chase's withdrawn investments, and the work continues.

> In response to our campaigning, four of the biggest players on Wall Street: Chase, Bank of America, Morgan Stanley, and Citi, have developed environmental due diligence protocols on lending to mountaintop removal mining companies. As will all corporate policies the devil is in the details. We will continue to monitor all three banks' lending to ensure that their positions on mountaintop removal coal mining impacts reality on-the-ground for the people of Appalachia.
>
> The biggest financiers of mountaintop removal mining are currently Swiss bank, UBS who, since January 2008, has provided more than $275 million of financing to MTR companies and Philadelphia-based PNC, who has provided over $80 million in financing to the MTR sector.[415]

More recent actions of the Life After Shopping Church have continued to use public performances and bank lobby interventions to shed light on the ongoing

[414] http://www.thelmagazine.com/TheMeasure/archives/2010/06/02/capraesque-miracles-chase-bank-stops-bankrolling-mountaintop-removal (Viewed 08/13/13).
[415] Rainforest Action Network, http://ran.org/mountaintop-removal-american-tragedy. (Viewed 08/13/13).

investment in what Reverend Billy refers to as planet killing business operations. Their current mascot is the extinct golden toad,[416] personified by masks worn by Stop Shopping and Choir members while protesting in bank lobbies in ongoing attempts to get Chase, Bank of America, and others to divest from corporations whose products and practices have large environmental impacts.[417] As a member of the Church of Stop Shopping I have not directly participated in these particular interventions, but have contributed with donations, letter writing, and some campaigning for Reverend Billy's Green Party backed run for mayor of New York City in 2009.[418] He recently avoided a year in prison for "rioting" in a Chase Bank lobby with the golden toads after charges were reduced. The next project is planned as a pollinator campaign for the spring of 2014.

On the subject of mountaintop removal and the impacts of mining for coal and other environmentally destructive materials the research has also looked at T. Allen Comp's AMD&ART (Abandoned Mine Drainage) (1994 - 2005). As Comp states:

> Abandoned mine drainage is only superficially a water problem: more deeply, it is emblematic of the malaise of economic and environmental desolation that is coal country. AMD&ART is a non-profit organization that is artfully transforming environmental liabilities into community assets in Southwestern Pennsylvania. The AMD&ART process is one that combines public art, environmental improvement and community engagement in treating abandoned mine drainage

[416] There remains some controversy over whether the golden toad was driven to extinction by global warming, or by cyclical El Nino cycles that caused the dry spell blamed for their demise. However, their extinction (declared in 1989) by the International Union for the Conservation of Nature cites both climate change and habitat loss as potentially contributing factors. www.nytimes.com/2009/03/02/nyregion/02billy.html?_r=0 (Viewed 08/14/13).
[417] http://news.sciencemag.org/paleontology/2010/03/global-warming-didnt-kill-golden-toad. (Viewed 08/20/13).
[418] *www.nytimes.com/2009/03/02/nyregion/02billy.html* (Viewed 09/02/13).

> (AMD), the most widespread environmental, economic and social problem of the Appalachian region. Using multidisciplinary intervention and wide public participation, AMD&ART has created a holistic approach to re-creating place that incorporates recreational elements, artful spaces, educational opportunities, historic reminders and restored wildlife habitat into designs for passive AMD treatment systems.[419]

In *Reclaiming a Toxic Legacy Through Art and Science* Erik Reece describes Comp's work in establishing the Appalachian Coal Country Watershed Team (ACCWT) established in 2002 as providing communities in rural areas that have been negatively impacted by mining and related ecological degradation with environmentally restorative assistance. The ACCWT trained more than fifty full time volunteers working to provide the communities in which they live with needed social and ecological change at the grass-roots level.[420]

An ambitious project in Vintondale, PA entitled "Litmus Garden" set up a series of filtration ponds on an AMD site there, bringing together the local community, some who returned after having been displaced by the environmental and economic shambles left behind in the wake of the mining operation. The project also brought in other artists, scientists, and ecologists who helped establish the series of ponds, which filtered the drainage water with crushed limestone. The edges of the ponds were also planted with a variety of foliage and trees to establish a wetlands that would further aid with the

[419] http://greenmuseum.org/artist_index.php?artist_id=15 (Viewed 11/01/14).
[420] Reece, Erik. *Reclaiming a Toxic Legacy Through Art and Science.* Online archive Orion Magazine, 2007. https://orionmagazine.org/article/reclaiming-a-toxic-legacy-through-art-and-science/ (Viewed 06/25/15).

bioremediation of the site, adding to the filtration of the water before it continued on to an adjacent river.

Comp has also worked with Amy Franceschini who established *Futurefarmers* in 1995 as a multidisciplinary platform for international artists to create work that focuses on play, interaction, collaboration, culture, and the environment.[421] Their name is a play on Future Farmers of America.[422] The group was established in part to respond to superfund sites around the San Francisco Bay Area, which also relates to Appalachian environmental issues, given that abandoned mines make up a large percentage of the superfund sites nation-wide.

Gardening Silicon Valley Superfund Sites, 2006[423] (GSVSFS) was a 2006 project culminating in an installation at the UC Davis Nelson Gallery, in conjunction with two workshops one on seed sculpture (seed bombs) and another on biodegradable silk parachutes. The exhibit emphasized informational material as well as 2-D and sculptural work. It referenced the fact that there are twenty-three superfund sites in Santa Clara County (Silicon Valley) alone, along with a toxic site in Guiyu, China (where women and children work to dismantle e-waste), numerous such sites in Appalachia and the South West, as well as many others internationally. The exhibit was intended as a

[421] http://www.futurefarmers.com/ (Viewed 11/03/13).
Discussed in Gomez-Palacio, Bryony and Armin Vit. *Women of Design: Influence and Inspiration from the Original Trailblazers to the New Ground Breakers*. Cincinnati: How Books, 2008 (167).
[422] Future Farmers of America. https://www.ffa.org/Pages/default.aspx (Viewed 12/04/13).
[423] http://culturehall.com/artwork.html;jsessionid=041784265FA659AAFFF044BCF64FE3B7?page=11990 (Viewed 11/30/13).

"thermometer" to see how much the audience knew about these issues prior to attending the exhibit and workshops.[424]

Prior to the exhibit, plant material was gathered from twenty-nine different superfund sites throughout Silicon Valley and brought to the gallery. They were run through a press lined with newspaper articles and maps referencing the environmental impact of the high-tech industry, specifically silicon wafer production. The pressed materials were presented as referential wafers containing both reportage and contaminated material, intended to help educate attendees about superfund sites not far from the exhibit. Part of its point was that, as Elizabeth Grossman has pointed out in *High Tech Trash*, there might be a popular tendency to think of superfund sites only in terms of visible scars on landscapes such as open pit mines.[425] Among the Silicon Valley superfund sites is the Moffett Field Naval Air Station (see the *Animalities, Soils, and Shipwrecks* project, chapter six), but numerous others are near more densely populated (and expensive) neighborhoods, not commonly associated with toxic dumps.

Coincidentally, my students and I have been working on a high altitude balloon project that was inspired by Christina Aguilera Rodriguez and the Adler Planetarium in Chicago, Illinois that also involved parachute making.[426] As part of their project, the Adler Planetarium crew put a marshmallow *Peep* on the Far Horizons rig as a ride-along

[424] culturehall.com/artwork.html;jsessionid...?page=11990 (Viewed 11/30/13).
[425] Grossman, Elizabeth. *High Tech Trash: Digital Devices, Hidden Toxics, and Human Health*, Washington D.C.: Island Press. 2006. (79).
[426] ttp://www.adlerplanetarium.org/far-horizons/ (Viewed 11/24/13).

in view of the cameras while the balloon was ascending.[427] Inspired by this, we conceived of the *Healdsburg High Altitude Balloon* project where the entire gondola would be a creaturistic sculpture. The intent is to reach the edge of space (70,000 feet) and retrieve audio and video footage, by necessity, without spending much money. Further, the gondola and parachute are made from all biodegradable materials so that if it is lost it will be of minimal environmental impact (excepting the balloon itself and the electronics).[428] The gondola is made from balsa wood, painted with egg tempera, buffered from the (-60f) cold with purportedly biodegradable hand-warmers, straw, and goatskin (see figure 5-5). Its equipment housing is made from a Stamets LifeBox.[429] It will be buffered from impact by being covered with (organic) marshmallows in a nod to Adler. As an intersection with Futurefarmers, we are also using a silk parachute. In the course of the research it came to our attention that silk manufacture can be problematic in a variety of ways. Silk which may be (comparatively) fair-trade and cruelty free is available, and we are still researching as to the origin of what we used, and engaging in conversations with the supplier. Due to ongoing difficulties with the Federal Aviation Administration and the desire to avoid potentially littering, we may end up modifying the project in unexpected ways. For example, during the course of the research we came across the anti-balloon campaign, "*Balloons blow, don't let them go"* (balloonsblow.org) and found out more about their harmful environmental impact.[430] As a result we are looking for a completely different application for the sculpture and its various equipment. So, while not an example of a piece that explicitly addresses soils, it is reflective of our

[427] *Peeps in Space*. http://www.youtube.com/watch?v=ygpYWzKGN6c (Viewed 11/24/13).

[429] Ibid.
[430] http://balloonsblow.org/ (Viewed 12/15/13).

Figure 5-5

Healdsburg High Altitude Balloon Project
Balsa Wood, Goatskin, Silk, Electronics

2012 to Present

systemic interest in avoiding negative environmental impacts, and is looking for a more soil related re-purposing. Further, the issues around silk-production that we began to discover would probably not have come to our attention had we not embarked on the

project, serving as an example of the potential productivities of transdisciplinary problem seeking as a research emphasis.

The artists, work, and project examples presented in this chapter have not all been explicitly about soils, but all, in one way or another, relate to issues that have some bearing upon its condition, or upon some of the social and political forces that impact its treatment and condition. The artists and projects selected were brought forward among many other important practitioners and thinkers and were presented because of direct influence, direct participation, or inspiration for the research that has gone into this dissertation, or because of topical intersections with its practice. The following chapter on *Soils, Interventions, and Liminal Performativities* focuses more specifically on our own work.

Chapter Six

Soils and Interventions

Soils, Interventions, and Liminal Performativities

This chapter will describe in detail the art projects (artifacts, performances, and their documentation) that were generated by my collaborators and myself during the research that has resulted in this dissertation. Some of the methodologies and tactics of the projects are restated as a reminder to the reader. As with some of the established work that was discussed in chapter five, the immediate connection between the address of soils and the form and character of the pieces may not be obvious on the surface. With the pieces that we have generated this is partly due to our intent to address some of the underlying attitudes, societal conventions, and philosophical rationales regarding ecology and environmental concerns. The address of some of these underpinnings is part of what is at work in the use of the term "liminal," in describing some aspects of the work, as opposed to "ritual" (something repeated with expectations of an outcome), or "spiritual" (which may carry with it the implication of a religiosity which is something we want to avoid).

As stated in chapter two on *Methodologies* the liminal work that we have brought to the projects is based partly on the intent to address some of the philosophical underpinnings of ecological thinking in the West, though these addresses are not necessarily always specific philosophical critiques. Hence the use of "interventions," not only to describe physical disruption of destructive environmental practices, but also to

describe theory and practice intended to open new 'spaces' of interpretation, and generate unconventional questions. Because some of these questions cannot be answered except through personal experience, we have, for dissertation purposes, concentrated on Michael Harner's *Core Shamanic* practice in order to have an established methodology to which to refer in our liminal explorations. This was also motivated by respect for the potential efficacy of these liminal explorations. While the research as drawn no conclusions about the extent or character of that efficacy, there are sufficient anecdotal accounts from Western shamanic practitioners, and from other cultures around the world, to suggest that liminal practice be approached with caution and, as Harner suggests, a great deal of humility. Hence we have looked to the methodologies of the Foundation for Shamanic Studies to ensure a degree of personal safety, and to avoid (imaginative or literal) invasive blundering when dealing with unknowns.

There is much about soils that remain unknown and undiscovered. As stated in previous chapters, of the millions of microbes that inhabit even a teaspoon of moist dirt the majority have not been named as discrete entities. Further, we do not understand the extent of soil's behaviors, especially with regard to root and plant interactions. This is why hydroponics has been, so far, ineffective at replacing soil, beyond the obvious logistics of its expense and imbedded energy. It was partly motivated by this knowledge that the research began with an installation that sought to explore local soils on a literal level, to familiarize its audience with local soil typologies, and celebrate the material beneath our feet on which we rely for our existence, but tends to go largely unnoticed.

The Dirt Gallery

The *Dirt Gallery* was conceived in 2010 out of a desire to become thoroughly familiar with the soil typologies of the Russian River Valley area and to become actively engaged with them in practice. It began by obtaining a county soil map from the United States Department of Agriculture Sonoma County Office and beginning to research the various soil series shown on it. As mentioned in chapter three there are at least seventeen thousand identified series, and the variety in the Sonoma County region is considerable. This is due to the Saint Francis Complex subsoil of the Northern California Coast, which is a jumbled mix of materials churned up by the folding of the Pacific Shelf folding under the leading edge of the American continent.[431] Added to this, as pointed out by Hans Jenny, is the action of the sea over millennia as it scoured and exposed differing layers in its retreat from the levels of the Pleistocene era.[432]

Northern California is also famous for its active earthquake faults, the three primary faults in Sonoma County being the San Andreas on the coastal edge, and the Rogers Creek, and the Maacama Faults, which run through the Russian River valley on either side of Healdsburg, along with smaller offshoots.[433] I was introduced to intersections between earthquake faults and art practice by Lowell Darling, initially by learning about his piece that involved finding exposed fissures and trying to sew them

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[431] See the *Soil Survey of the Healdsburg Area, California* done by Watson, Ebenezer Bliss. Washington D.C.: Department of Agriculture, 1917.
[432] Logan, William Bryant. *Dirt, The Ecstatic Skin of the Earth*. NY: Norton, 1995. (188). http://nrs.ucop.edu/reserves/jenny_pygmy/jenny_pygmy_forest.htm (Accessed August, 2013).
[433] Ayer, Eleanor H. *Earthquake Country: Traveling California's Fault Lines*. Phoenix: American Traveler Press, 2007.

back together with rope and large pins driven into the ground.[434] North Eastern Sonoma County also has active volcanic steam vents, and in addition to the quartz, feldspar, basalt, chert, and serpentine[435] (the official state rock of California) to be found, there are also large amounts of volcanic rock.

Part of the motivation for an exhibit on local soils in the Russian River area was the desire to publicize and celebrate the rich geological and pedalogical environment under our feet. While the direction that the research for this dissertation would take was unpredictable at that time, it was clear that it would involve dirt and soil in some intimate way. There was already a sense that the research would indicate the need for agricultural soil's imperiled position to be recognized, and that it would begin with gaining an understanding of soil's material and behavioral characters at the outset.

Thus, the *Dirt Gallery* began as something other than an explicitly activist project, although that motivator was in the background. It was more an invitation to become interested in the "place" of the Russian River,[436] that is, the character and behaviors of its soils. This turned out to be a fortunate coincidence with regard to the venue for the gallery. There was no desire on my part to carry truckloads of dirt into a traditional exhibit space. I was familiar with Walter De Maria's *New York Earth Room* (1977), and Yutaka Kobayashi's moving of dirt from Okinawa to Tokyo, and aside from not wanting

[434] Darling, Lowell. http://www.lowelldarling.com/index1.shtml (Accessed August, 2013).
[435] Harrison, Susan and Nishanta Rajakaruna, *Serpentine: The Evolution and Ecology of a Model System*, Berkeley: University of California Press, 2011.
[436] Schubert, John *Russian River*, Charleston S.C.: Arcadia Press, 2011.

to merely repeat them, the cost would have been prohibitive.[437] Therefor the idea instead was to dig a "room" that would house the exhibit, wherein the gallery itself would be made *in* the dirt that it celebrated.

Finding a place to dig such a hole turned out to be surprisingly difficult considering that Healdsburg is a rural area with a great deal of open space. After a year of searching and making inquiries, the project had almost been abandoned until driving past the local gravel quarry the idea came up that if anyone could dig a giant hole it would be them. Syar Industries has been a strong supporter of the Healdsburg School District for many years, and when approached, they offered a location at their vineyard near the river. A lengthy process of applying for permits followed, wherein finally the planned proportions of the gallery were shrunk sufficiently to avoid lengthier processes and large fees. Preparations were facilitated by a $900 grant from the Healdsburg Center for the Arts in the spring of 2010.[438]

The Syar vineyard location was conceptually challenging at first. Syar Industries has been mining gravel along the Russian River for many years and their abandoned pits form lakes along the Russian River south west of Healdsburg.[439] This mining activity is blamed for sedimentation downstream that has had adverse effects on salmon and steelhead runs in the river. Mining is blamed for "channelizing" the river, which can

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[437] De Maria, Walter. *The New York Earth Room*, 1977. http://www.diaart.org/sites/main/earthroom, (Viewed 12/15/13).
[438] Healdsburg Center for the Arts
http://www.healdsburgcenterforthearts.com/ (Viewed 12/15/13).
[439] See their study, *Syar Industries, Inc. Mining Operation and Reclamation Plan along the Russian River, Section 404 Permit Application. Environmental Impact Statement, 1997.*

exacerbate flooding and erosion, and for impacting of drinking water quality from the aquifer beneath the river.[440] Syar has been in a number of disputes with the county and local environmental groups such as Russian Riverkeeper, of which I am a member.[441] Syar's position on the issues is that everyone drives on freeways, which rely on gravel, so the environmentalist position is hypocritical, and furthermore, the quarry lakes "provide wildlife habitats that would otherwise be missing from the valley."[442] Another issue was with vineyards themselves, which tend to be significantly fertilizer and pesticide intensive.[443] Local vineyards also use water from the river and tributary creeks in irrigation and frost abatement, causing at least one of them to go dry in the summer and draining deep aquifers underneath.[444]

Because of Syar's offer to provide the venue it was necessary to temper the environmentalist, activist character that the exhibit might otherwise have had. Syar was concerned about any potentially bad publicity and for this reason only a small, selected number of people were invited. It was a learning experience on many levels, and while at first it felt somewhat disingenuous to neutralize strident messages about soil conservation, it also made sense to begin with a display of soils that was more celebratory than condemning of particular practices. Adding to the sense of doubt surrounding the

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[440] http://www.ncriverwatch.org/press/vouri1.php (Viewed 12/15/13).

[441] http://www.sfgate.com/green/article/Plan-to-mine-gravel-in-Russian-River-draws-fire-2478801.php http://russianriverkeeper.drupalgardens.com/content/gravel-mining (Viewed 12/15/13).

[442] **syar**familyvineyards.com/ (Viewed 12/15/13).

[443] US Environmental Protection Agency guidelines for pesticide safety. http://www.epa.gov/region07/pesticides/pdf/wps_vineyard_training.pdf (Viewed 12/15/13).

[444] http://spot.us/pitches/1053-growing-wine-in-northern-california-a-sustainable-natural-resource-or-the-next-boom-to-bust/updates/1280-looking-ahead-part-three-of-three (Viewed 12/15/13).

project was the fact that the *Dirt Gallery* itself was an environmentally intrusive project, a "land art" project more in the vein of Smithson than of our *Seed Bombs*, for instance.[445] There are those in environmentalist circles who might view the *Dirt Gallery* as a desecration, as for example from a (traditionalist) Lakota sensibility wherein "scarring the earth" in such a way might be seen as an affront.[446] Ground penetrating radar (GPR) used in digital archaeology is now showing that even fairly shallow disturbances such as agricultural plowing can remain detectable in soil for hundreds of years.[447] Thus, even though the *Dirt Gallery* was dug in an agricultural area, and would be filled in shortly afterwards, I was aware that its traces might remain indefinitely.

Up to the day of the installation I was unsure of whether the display space would "work". In order to reach eye-level the floor of the gallery would have to be six feet below the surface, but this presented strategic challenges. The county building commission would allow a six-foot excavation, but the Occupational Safety and Health Administration (OSHA) guidelines forbid sheer walls in an excavation taller than four feet without braces, which would have been a significant interference. We managed to partially overcome the problem by terracing, but even then we couldn't get the total depth below five-feet. On the day of the dig, the vineyard manager Rand Dericco, dug out the

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[445] Smithson, Robert. *Spiral Jetty*, 1970
http://www.robertsmithson.com/earthworks/spiral_jetty.htm
(Viewed 12/15/13).

[446] http://whyfiles.org/2012/farming-native-american-style/
(Viewed 12/15/13).

[447] Jim Doolittle, Jim. "*My Thirty Years With Ground Penetrating Radar.*"
Soil Science Society of America Journal, vol. 53, no. 4.(July, 2012). (Viewed 12/16/13).
sydney.edu.au/alumni/sam/june2013/damian-evans.shtml, describes the work of Damian Evans at Angkor Wat in Cambodia, who can reconstruct what may have once been the largest city in the world by remote sensing of the soil. The outline of streets, rice fields, and other soil disturbance is still visible after 1300 years.

twenty-five foot by fifteen-foot by five-foot room, piling the tailings around it to give the impression of greater depth. Following that, my dad, five students, and I went in with shovels and lowered the floor an additional foot by hand in order to get the hung displays at a comfortable eye level. The following day we installed the work, held the reception, and then took the work down that evening. The pit was filled in again the day after.

For months before the exhibit soil types were identified, located, and gathered. A range of six soil types were chosen for variety and accessibility. Collecting them involved a certain amount of trespassing, but not in difficult to reach (or leave) locations. Samples were prepared for display by keeping some of each in a raw, moist state, some dried and sifted, bisque-, pit-, and raku-fired. Among the soil exhibits were two sets of works, the first was a "*Soilogic Body*" made with pedalogical horizons separated into jars, with labels that identified them as analogies to animal body parts. A jar of C horizon gravel with a cap of clay was identified as the skeleton, "*Bones*." A jar of Bt horizon clay was labeled "*Muscle*." A jar of A horizon loam with a footing of clay and a handful of earthworms was labeled "*Stomachs*." An AO horizon of humus, roots, and grass was labeled "*Lungs*." A final jar with all horizons, forming a miniature pedon was

labeled "*Brain*" (see figure 6-1).

Figure 6-1

Dirt Gallery
(Soil Body Jars & Dirt Displays)

Yolo Loam, Heneke Loam, Stonyford Boomer Complex,
Pleasanton Series, Goldridge & Russian River Silty Loam

June 13, 2010

The *Soilogic Body* was not so much an assertion, but a suggestion. It was an offering of the proposal of soil bodies as comparably animistic, such as organs of a living, coherent, if not 'unified' body. The intent was to propose this idea to the viewer for whatever they might take away from it. The viewer might agree or disagree, but in doing so would be afforded a chance to reflect on personal or scientific reasons for one assessment or other on a question that does not seem entirely settled in ecological circles at large. "Is soil "alive"?" is a debate that persists despite the descriptions of soils as "natural bodies", predicated on some living organic content, and usually teaming with micro-organisms, many of whom (up to 90%) the human body shares in common.

Additionally there were six framed pieces made entirely out of local soils "frescoed" onto the gallery wall as mud plaster. Below each, was a raw sample, a powdered and sifted sample, and a variety of fired samples. Raw, and especially wet samples ranged from the green of the Yolo (perhaps due to glauconite, an iron potassium phyllosilicate), to reddish (Henneke series, weathered from serpentine). Kiln and pit fired samples were almost uniformly red, displaying the iron content of the Yolo series, to which nearly all local soil is related (i.e., companion typologies). These were labeled and displayed as an invitation to the audience to become interested in the local soils and their characteristics. Outside of the pit that formed the gallery, there was a soil map on display with labeling for the various soil typologies, and sites from where they were gathered within a six-mile range of the gallery.[448]

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[448] https://www.soils.org/publications/sh/articles/53/4/4 (Viewed 12/15/13).

In an adjacent corner was the "*Pedon*" that was spared out of the excavation, a one meter by one meter by one and a half meter rectangle with its A and Bt horizons visible and marked.[449] It was also covered with signage (ink on dirt-stained raw canvas) describing pedons. On the floor was a marker showing that the six-foot soil depth reached just below the impact of daily temperature fluctuations, along with a note about seasonal temperature fluxes at depths above twenty feet.

Chris and Mary Pettis-Sarley's ceramics were set into the tailings pile, along with bones and gardening tools. Chris' whimsical, almost creature-like, oil jars showed off the colors of local minerals absorbed from wood ash during firing. Mary's ceramic busts (also wood-fired) with animal skulls for heads (found in fields around Napa and Sonoma Counties) included sheep, bobcat, deer, skunk, and goat. Lois Lancaster and I also

[449] See definition of the size of a Pedon. Schaetzl, Randall J. and Sharon Anderson, *Soils: Genesis and Geomorphology*. Cambridge: University Press, 2005. (34).

included small ceramics fired with Yolo slip (see figures 6-2, 6-3).

Figure 6-2

Dirt Gallery

Healdsburg, Ca
June 13, 2010

Figure 6-3

Dirt Gallery
Healdsburg, CA
June 13, 2010

Additionally there was a twenty-foot long historical timeline on canvas, alternately referred to as the *Underground History of Western Aesthetics*, and the *Meatline*. The *Meatline* documents various milestones in the history of ideas, and other

pivotal points, in western history from seven hundred BCE to the present. Its entries range from historical pinpoints to broader concepts such as social movements, and include a certain amount of editorializing. The later entries in the industrial revolution and green revolutions concentrate on environmental issues. The comparative void in the early middle-ages section was filled with Korean history prior to the exhibit at the Korean Cultural Foundation gallery in Seoul.[450] Contemporary environmentally related events and issues regarding Korea, such as the construction of the Jeju Island Navy[451] base were also added. At the year nineteen hundred CE it runs out of space and starts anew with a parallel line moving ten years to a foot rather than one hundred years to a foot up to that point. This afforded the opportunity to make some predictable historical comparisons such as the green revolution and the early stages of the industrial revolution. At the year two thousand it runs out of space again and doubles back on itself, beginning to run backwards, and documenting new historical events as it goes. While the rest of the work that I included in the *Dirt Gallery* was made up of temporary installations, the *Meatline* remains an ongoing piece (see Figure 6-4).

[450] See "*Northern California Artists Find Inspiration in Korean Culture*", *Korea Foundation Newsletter,* vol 20.2. February, 2011.
[451] Chan-sik, Hong. "Truth About Gureombi Rock" *Korea Focus*, May, 2012.

Figure 6-4

Meatline
Dirt Gallery
Ink and Acrylic on Canvas
2009 to Present

The *Dirt Gallery* did not start out with the intent of being a collaboration with Five Looking West, but presented an opportunity to display together for the first time. Frederick Young also attended and helped with some of the set-up.

Five Looking West

Five Looking West formed in 2009 as a collaborative project among five Northern California artists, Marilyn Hulbert, Mary Pettis-Sarley, Chris Sarley, Lois Lancaster, myself, and Lewis Lancaster as our cultural advisor. Lois Lancaster proposed the idea of working together after the Korean Cultural Foundation expressed interest in a show of western artists whose work was influenced by Korean art and culture.[452] This was true of each member of the group, and though our work was all rather different in character and media, we felt that it could mesh together in potentially interesting ways.

Marilyn Hulbert is a photographer who has worked professionally for many years on images that are particularly concerned with land, location, and geography in a variety of ways. Mary Pettis-Sarley works mostly with ceramic and textiles, using a variety of site-specific, natural materials from plants and animals. She also practices the throwing of the I-Ching on a regular basis as part of her art practice.[453] Chris Sarley is a ceramicist who uses traditional Asian wood-firing techniques for pieces that draw their colors and some of their physical characteristics from local minerals in wood ash rather than from glazes. Lois Lancaster works primarily with textiles and artist's books, many of which use Asian materials, such as old manuscripts and are influenced by Buddhist

[452] Korea Foundation, Seoul. http://www.kf.or.kr/;jsessionid=4WpB9km7cwoy97d1HJeV3oqSExUjJklw1gGaVHp3db7n8RDG2oQQ6X9fnVdZ1UyW.kf_was_servlet_engine2?menuno=33 (Viewed 12/17/13).

[453] The lines bordering the Yin-Yang symbol at the center of the Korean national flag are I-Ching trigrams.

philosophies. My work is especially concerned with soil, which includes issues of site-specificity and portability, and has been strongly influenced by Korean art since visiting Seoul in 1997.

What ties all the work together is that each individual artist does work that uses, or is about, local materials, and celebrates local land. Beyond this we have all been influenced in some direct way by Korean art. What ties our work to Korea especially is that Korean art has often been significantly concerned with its local materials and locations. With notable exceptions, in Korean ceramics, carving, and painting there is a roughness remaining in the work, where the natural material is allowed to direct the piece or show through.

Many Korean art works are designed to boldly omit details and to instead focus on the bigger picture. If Korean artisans were not highly skilled, this less than refined approach would simply lead to inferior works; but when combined with exceptional craftsmanship, it can result in unparalleled works of art.[454]

Thus, at our opening at the Korean Cultural Foundation gallery in Seoul, we stated that:

In doing work that focuses on, uses, and cooperates with some of the natural materials of Northern California we are also working in a way that shares a sensibility with many Korean artists. We attempt to

[454] Choi, Joon-sik, Department of Korean Studies, Graduate School. *Korean Design Principles, Simple, Natural and Human.* http://www.koreana.or.kr/months/news_view.asp?b_idx=1569&lang=en&page_type=list (Viewed 12/17/13).

develop intimate relationships with local materials and celebrate them, while also reaching out to find commonalities in other cultures.

Without knowing initially how five different styles of work would fit together, it made sense to begin by generating pieces collaboratively. At first this involved starting pieces and then trading them every few weeks with complete license given to add or alter. In this way, the work began as sculptural "*exquisite corpses*" with changes being photo-documented along the way, while each artist was also generating individual pieces. This style of working lasted for most of a year, until it was decided that too much time was being spent in discussions, and that our independent work could be exhibited successfully together. We also consulted the I-Ching as part of making decisions about how to proceed. (See Figures 6-11 - 6-16).

While conducting the research and practice for this dissertation it was necessary to integrate all of my Five Looking West projects with a concern for soils. This usually presented little difficulty, as a focus on local land is almost innately "in the spirit" of Korean art. As discussed previously, the first exhibit of Five Looking West as a group was in the *Dirt Gallery* in June of 2010. Where a few of the pieces generated share only an indirect relationship with ecological concerns they are mentioned only briefly among the following descriptions of the Five Looking West pieces.

Jangseung (Guardian Figures)

Jangseung are Korean guardian figures that were erected at village entranceways to ward away malevolent spirits. They may also be found at geographical boundaries such as valley entranceways. Jangseung are usually site-specific (tutelary) in nature, both in being made from available trees, and in varying somewhat in character from region to region. However, there are some national commonalities, such as their being often found in male and female pairs. Males are often inscribed with the words "Great general under heaven", and female inscriptions read "Woman general under the earth."[455] In Korean shamanism it is common to call upon the spirits of historical figures, such as famous warriors (generals) during ritual practice.[456] Jangseung are also referred to as *Beoksu* in some regions of Korea, which is a variation on the word for shaman.

Jangseung are generally made with headgear reflecting that of a Confucian scholar, military general, or official. I have also found examples made from upturned tree trunks with remaining roots that create "horns", adding to their frightening appearance. There are also stone versions, made from (volcanic) basalt columns, such as those of Jeju Island. The Jeju varieties are also referred to as *Dolhareubang* ("stone grandfather") and are identified as scholars or military officials by the placement of their hands.

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[455] Matthew Benuksa, Matthew. *Spirit Poles of Korea*. Korean American Historical Society, 2011. http://www.kahs.org/downloads/JangseungPresentation2011.pdf (Viewed October, 2013)

[456] Dwight Bonair, Dwight. *Korean Shamanism*. OM Times. January, 2013. http://omtimes.com/2013/01/korean-shamanism/ (Viewed 12/18/13).

My research has not identified a particular historical point of origin for the Jangseung, but there are records of them going back at least to the Joseon Dynasty of the 18th century CE, whereas the Korean American Historical Society states that their tradition dates back over a thousand years.[457] During the "New village Movement" in Korea in the 1970's the effort to rapidly modernize the country extended to cultural practices and artifacts as well, and many Jangseung were destroyed or displaced during this era. "In the present day, although there has been some form of a revivalist movement of Jangseung, original Jangseung are highly rare and modern incarnations tend to follow a stylized pattern."[458]

My exposure to the Jangseung was when fist visiting Korea as an adult in 1997, where I first saw an older (or at least heavily weathered) pair in a park in Seoul. I was electrified by their appearance, partly because of the juxtaposition of characteristics that they display simultaneously. The facial expressions of the Jangseung can appear threatening (sometimes described as "grotesque"), as would be appropriate to their roles as guardian figures, but also humorous and whimsical at the same time. By interviewing a number of gallery owners, artists, and museum staff during my visit, I found that what Jangseung examples had been saved during modernization periods were sometimes brought to Seoul after having been removed from more rural areas. Once I started taking more notice of them, I saw quite a few in urban parks, and even leaning in front of hardware stores. There were also examples in galleries being made by contemporary artists with a renewed interest in them, coupled with the desire by some to "counter the

[457] http://www.asiaeducation.edu.au/sites/gokorea/media/swf/3_4.swf (Viewed 12/18/13). http://www.koreabrand.net/net/en/book.do?kbmtSeq=2993 (Viewed 12/18/13).
[458] Ibid.

dwindling awareness of the artifacts", as one of the stated reasons for establishing the Jangseung Park in Chilgapsan in 1999.[459]

Exposure to the Jangseung was the inspiration for my work going in the direction of sculpture, and continuing to do so during the research for this dissertation. It did not begin immediately after visiting Korea for a variety of reasons (including that I was living temporarily in Japan at the time and hadn't the means or space to begin doing large physical pieces). Instead I worked for years on sketchbook drawings as the basis for what would be built when the opportunity arose. Examples are seen in the design for my painting that was acquired by the Korean Cultural Foundation in 2012. (See figure 6-5).

The Jangseung also raised questions about the characteristics and issues of site specificity vs. portability with regard to soils in the research for this dissertation. Once dirt is removed from its pedon it ceases to be soil, or at least a particular soil series, but how much of its behavior remains and for how long? When I began building "Jangseung" for the Five Looking West projects in 2009, it was with the idea that they would contribute to the experience of intimacy with the local soils from which they were made, and continue to raise questions about how much of a "place" can travel and still maintain some of its unique behaviors.

Because some of the Jangseung in Seoul had been moved from their site-specific locations (yet seemed to continue to appear 'powerful' and compelling objects), the

[459] Jangseung Park, Chilgapsan Mountain, Korea. http://visitkorea.or.kr/enu/SI/SI_EN_3_1_1_1.jsp?cid=1375699 (Viewed 12/18/13).

Jangsueng designed for Five Looking West were made to be portable from the outset. This involved either making them from small trees, or in sections for the larger, heavier ones. The first figure was made from a Monterey Cypress from Stinson Beach, California, which had become diseased and was cut down. It may be noteworthy that

Figure 6-5

Jangseung
Acrylic Ink, Korean Dirt, and Yolo
Loam on Raw Canvas

2012

indigenous California cypress trees became very popular in Europe and Asia, and have been found to be the source of fungal pathogens that are killing cypress trees in large numbers in other parts of the world. The Monterey Cypress trees have been resistant to

pathogens such as cypress canker and others up until recently, but are now dying in large numbers here as well.[460]

Following the widespread destruction of Korean Pine forests during the Korean War the reforestation efforts have been quite successful, according to Lester Brown of the Earth Policy Institute.[461] However, they are also having serious problems with Pine Wilt nematodes, and while I have not found any direct correlation between Korean Pine Wilt and the large numbers of Pitch and Loblolly seedlings from the US that were imported to Korea during their reforestation efforts, those varieties are quite susceptible. Like many other species their susceptibility increases as they are planted outside of their native regions.[462] Knowing that the *Jangseung* figure would likely travel to Korea (though dry, and without exposure to the outside) was present to mind when I chose to use a diseased tree for the first portable figure. (See Figure 6-6).

[460] http://newscenter.berkeley.edu/2011/09/01/tree-killing-pathogen-traced-to-california/ (Viewed 10/20/13).
http://pt-lobos.parks.state.ca.us/CypressEvolution.html (Viewed 10/20/13).

[461] http://www.earth-policy.org/ (Viewed 10/20/13).
http://www.koreaherald.com/view.php?ud=20130321000949 (Viewed 12/13/13).

"South Korea's once-rich forests were ravaged in the twentieth century by unmanaged logging for timber and fuel during the Japanese occupation (1910–45) and by the Korean War (1950–53). Reforestation policies put in place since the Korean War have had a salutary effect, but the process takes time. Today 70 percent of South Korea's forests are less than 30 years old and are therefore largely unproductive. Timber imports far outnumber exports".
http://link.springer.com/chapter/10.1007%2F978-4-431-75655-2_5#page-1
(Viewed December, 2013)

[462] http://www.apsnet.org/edcenter/intropp/lessons/nematodes/pages/pinewilt.aspx
(Viewed November, 2013)

Local versions of young, replacement forests are found in the abundance in the Christmas tree farms around Sebastopol. Because Sonoma County is agriculturally dominated by vineyards, I chose wood from a tree farm that had been bulldozed to make

Figure 6-6

Jangseung Figure
Monterey Cypress
5'x2'x2'

2009 -2011

way for grapes as the material for the next two Jangseungs (see figure 6-7). The fact that many of the local orchards, especially the local Gravenstein apples for which Sebastopol is known, are being removed for viticulture is cause for consternation among many

Figure 6-7

Jangseung Pair
Pine
7'x1'x1'

2011

residents.[463] It is also the case that some pine stands in California and Korea are now being managed by *silviculture* (preventative clear-cutting), due to the increased prevalence of viral and parasitic diseases. This appeared to provide an interesting physical background for the materials used to make the *Jangseung* figures.

"Pedons"

Pedons are small basalt standing stones originally inspired by the Jeju Island Jangseung, as well as Celtic and Norse Neolithic stones. The title "Pedons" was originally chosen for these due to the fact that their shape fits the description of a soil pedon, being roughly hexagonal, and the fact that some of the Jeju Island basalt columns for which it is famous, also fit the SSSA prescribed dimensions for a 'soil unit'. In the course of the research I found that California and Korea share a somewhat similar geological and pedalogical make-up, partly due to their both being at Pacific and continental shelf meeting points with a volcanic history. Also as the research has found information about the pending partial destruction of Jeju Island to make way for a US Navy base as part of the "pivot-to-Asia" operations, I wanted to begin work that would express some solidarity with the Jeju residents who are protesting against it.[464] This is discussed in more detail under the *Consulate Projects*. Along with being included in all of the Five Looking West exhibits, the *Pedons* have been incorporated into a variety of

[463] http://www.pressdemocrat.com/article/20130729/articles/130729511 (Viewed December, 2013)
[464] http://thediplomat.com/2013/11/pacific-power-the-politics-of-the-us-military-in-se-asia/ (Viewed December, 2013)

other projects including *Listening to Crane Creek*, and *Listening to the Merced River*, both associated with the *Animalities, Soils, and Shipwrecks* projects. (See Figure 6-8).

They will next be used in an undersea installation at Point Arena, California in connection with Five Looking West, and a loose collaboration with Lowell Darling's project called *World Acupuncture*.[465] Lowell's work involving traveling up and down the state of California finding visible fissures along the San Andreas (earthquake) Fault, and attempting to sew them back together was mentioned earlier.[466] More recently I found that that performance piece had been done at Point Arena just north of Sonoma County, where the San Andreas turns west and heads out to sea. Coincidentally, its trajectory is almost precisely towards Jeju Island, so the two projects make a potentially interesting intersection there.

[465] http://www.lowelldarling.com/worldacu.shtml
(Viewed July, 2013)
[466] http://www.krowswork.com/darling.html (Viewed December, 2013).

Figure 6-8

"Pedons"
Basalt (Sonoma Field Stone)
30"x8"x8"

2010

Consulate Projects (Splicing Location)

The Consulate Projects have consisted of the ceremonial acquisition of soil samples from consulates in San Francisco, and using them to create other art work that references issues in the countries from which they came. The projects initially came out of questions about the potential portability of "location" inspired by the Korean Janseung. Wooden objects that have been planted in the ground almost inevitably bring some physical material with them if they are moved. And, they bring some of the physical characteristics of a place with them internally as mineral traces. The extent to which the movement of materials can mean the movement of behaviors depends on the character and quantity of those materials, and the type of behaviors for which one may be looking.

Beyond the potential spread of contaminants, which my projects have usually tried to avoid, the portability of specifically identifiable behaviors may be more appropriately posed to chemical or forensic analysis. My interest, initially, concerned questions over "spirit of place", what is it?, and, can it move? In the course of the research for this dissertation I have found that those are probably not question that can be answered except through personal experience. In other words, answers such as those coming from the Korean shamanic tradition on which the Jangseung are based tend come from belief systems, and have been, at times, conflicting depending on who I interviewed on the subject. However, the persisting interest in such questions has continued to inspire further research and physical work.

Another inspiration for the projects was in looking at the irony of politically spliced locations constituted by consulates. Consulates and embassies *are*, according to law, the "soil" of the countries that they represent. Further complication of this idea is seen in the example of the Mexican Consulate in San Francisco, where the second installation of a Jangseung was done (the first was at the Asian Art Museum not far from the consulate). The Mexican Consulate is on land that was originally Ohlone (Coastanoan) native land. It was colonized by the Spanish, from whom it gets its name, as part of the Mission Trail, and some of the physical traces of that colonization persist. It was, in turn, colonized by Euro-american settlers (Bear-flaggers and prospectors, etc.) by land and sea. While that legacy remains as its dominant demographic feature, it is currently being populated by another wave of immigration from Mexico and Central America. These layers remain physically present in the soil, in the form of artifacts, shell mounds, agricultural traces, architectural structures, etc.

The Mexican Consulate is probably the most layered example of this physical complexity, but there have been many waves of fairly large-scale immigration in San Francisco's history ranging from Japanese, Chinese, Russian, Italian, Irish, Polish, and Korean, all of which have established neighborhoods with concentrations of populations from these countries. The first *Soil Transfer* as part of a consulate project was at the Korean Consulate in 2010. We contacted the consulate requesting a dirt sample as a legal stand-in for actual Korean dirt, which was to become the material for a series of paintings and for use in sculptures. As it was, the consulate had a bag of actual Korean dirt that had been sent in a diplomatic pouch for inclusion in the foundation of a Korean War

Memorial being erected in San Francisco. Sending the dirt by mail, regardless of its purpose is still illegal, but as it was in a diplomatic pouch, they knew that it was unlikely to be inspected. During the course of my work with Plymouth I have always carried dirt samples as part of the related artwork and presentations, and despite warning notices left in my luggage, the samples have never been confiscated. The consulate still had a large bag of the South Korean dirt left (gathered from the grounds of the Presidential Palace in Seoul) and generously offered to give it to me. Mr. Yang, the Consul General, agreed to meet for the *Dirt Transfer Ceremony*, give us the material, and sign a *Certificate of Authenticity* (see figure 6-9). The certificate and photographs of the ceremony have been included in all subsequent Five Looking West exhibits. The dirt was included in the *Dirt Shrine* along side soil maps and Yolo Loam samples, rubbed into the surface of the *Jangseung* figures, and used in several paintings (see figure 6-10).

Figure 6-9

Dirt Transfer Ceremony
Consulate Projects, South Korea
San Francisco, Ca

2010

Figure 6-10

Dirt Shrines
Delaine Eastin Gallery, Healdsburg, Ca
Korea Cultural Foundation Gallery, Seoul

2010-2011

Following the Five Looking West exhibit at the Korean Cultural Foundation gallery in Seoul in January, 2011, I took a bag of the remaining Korean dirt and tried to return it to the Presidential Palace where it was initially gathered. There were more police than

tourists in front of the palace, and I was the only westerner there so stealth was difficult. As I pulled the bag and a camera out of my pocket, I was quickly surrounded by four officers, who demanded to know what I was doing. They spoke little English and I speak no Korean so my showing them photos of the Dirt Transfer ceremony, and certificates and letters only added to the confusion. After persisting in trying to get them to accept the bag of dirt, or let me pour it out, one of the officers called his wife who spoke English well. She and I spoke for fifteen minutes while I explained the projects as completely as I could. Afterwards I handed the phone back to the officer, and another long conversation followed between he and his wife, who finally told me that they couldn't honor the request in any way. I thanked them all and left. As soon as they were out of sight I poured the bag out under a tree just on the outer side of the palace wall. As it weathers, it will seep below the concrete footings and can be considered to be back on location.

The return of the dirt to the Presidential Palace has yet to reference anything specific, other than a potentially poetic closure to the piece. Because the work has involved a considerable amount of traveling, and contains site-specific references and materials, there is a sense of wanting to take advantage of opportunity when it presents itself. In some cases gathering material or an action taken has become useful later, so we have cultivated a way of working that attempts to maximize interactions with the places with which the pieces are involved.

Gaining access to the consulate dirt has involved sending letters from Healdsburg High School, referring to the ceremonies as related to collaborative student projects. In the process of working on the pieces and sharing them with students, I have also shared as much cultural information as possible, often informally in the context of answering questions about the appearance of the work. The *Transfer Ceremonies* have a tongue in cheek appearance, but are not really "mock". They are explained as art projects using "legally" national dirt in work that relates to various issues in soil ecology, if indirectly. Specifics with regard to potential activist applications are not mentioned in the initial requests, nore the fact that I consider the ceremonies themselves to be performance art.

However, one of the results of the Korean consulate project was the delivery of a letter to the Consul General several months later on the issue to the construction of a US Naval base on Jeju Island off of the coast of South Korea. The letter expressed solidarity with the residents of Jeju Island who are continuing to resist the construction of the base, which will involve dredging and other forms of environmentally destructive development on the island, despite the fact that it is a UNESCO heritage site. These protests are taking the form of demonstrations, hunger strikes, and civil disobedience, such as residents chaining themselves to bulldozers. Islanders overwhelmingly oppose the construction of the base, and since the South Korean government has not been responsive to the protests, they have urged US citizens and others around the world to contact representatives on their behalf. The petitions ask diplomatic staff to urge the US to drop the construction of the base. The letter that I delivered to the Korean Consulate mentioned the *Dirt Transfer Ceremony* and stated that engaging with conservation efforts both in the US and Korea

was part of why they were being done. Thus, the *Dirt Transfer* served as an introduction so that the letter was not being delivered by a complete stranger, but by someone who had engaged the consulate in a (hopefully) memorable event. Whether or not this added anything to the impact of the letter cannot be determined, but it may have that potential. Previously, when my students and I painted the steps of the capital building in Sacramento with Mexican mud we assumed that the humor and potential absurdity would make our message easier to dismiss but harder to forget. However, in conversations with the Yes Men and V. Vale in the course of this research we have learned that humor can add appeal to activism, garner greater media coverage (where applicable), and thus potentially its effectiveness.

Figure 6-11

Five Looking West Exhibit
Korean Cultural Foundation Gallery
Seoul, Korea

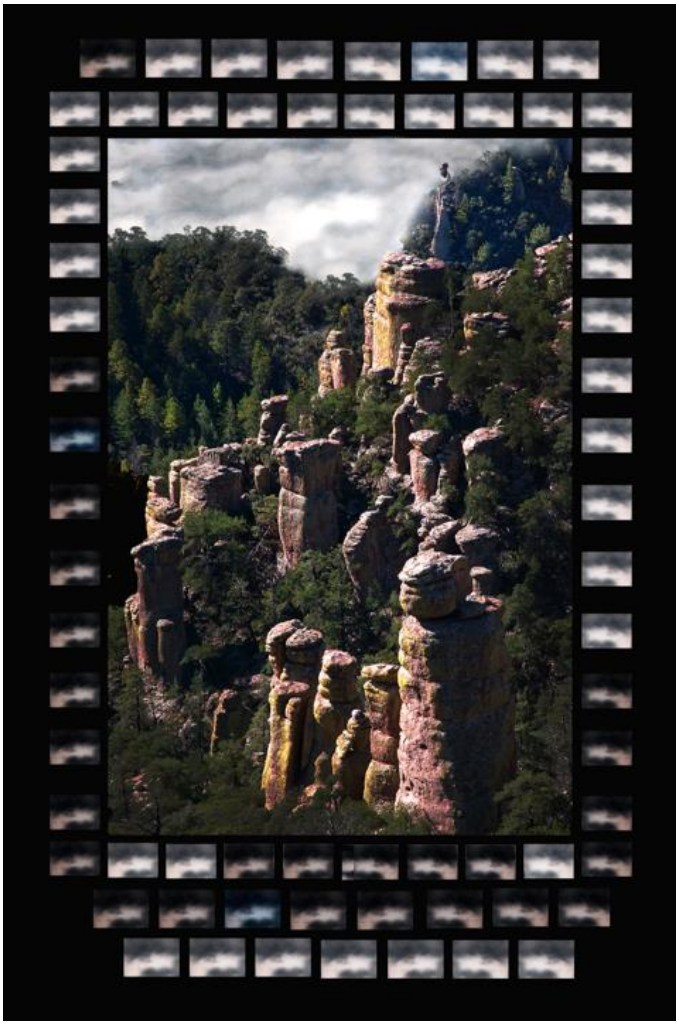
January, 2011

Figure 6-12

Chris Sarley Ceramics
Korea Foundation Gallery Exhibit

January, 2011

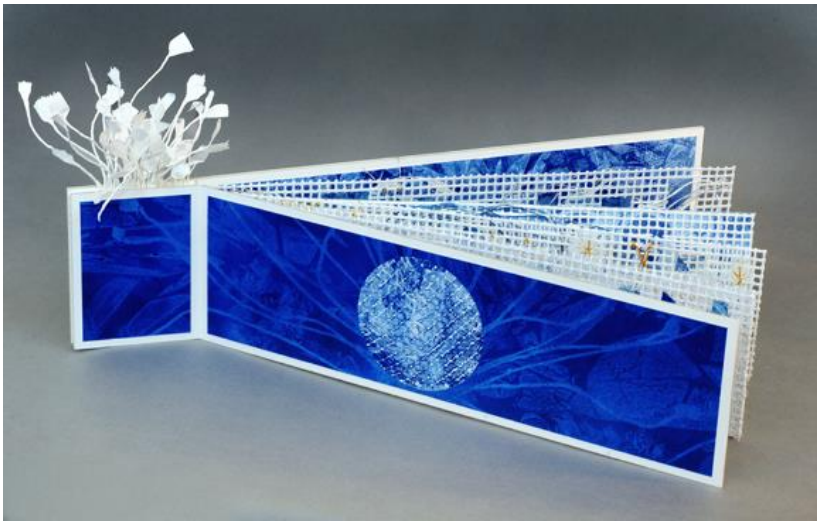
Figure 6-13



Marilyn Hulbert
Many Directions
Digital Print
Korea Cultural Foundation Gallery Exhibit

January 2011

Figure 6-14



Lois Lancaster
Paperstring Theory
Korean Cultural Foundation Gallery, Seoul
January, 2011

Figure 6-15

Mary Pettis-Sarley
Figurines
Mixed Media
January, 2011

Figure 6-16

Linus Lancaster
Listening to Materialities
Korean Cultural Foundation Gallery

January, 2011

Animalities, Soils, and Shipwrecks

(Can a Horse Talk to a Zeppelin?)

Animalities, Soils, and Shipwrecks is an ongoing, multi-layered series of projects that first arose out of Frederick Young's dissertation research on *animalities* at University of Florida, Gainesville in the late 1990s[467]. "Animalities" here refers to the roles that *concepts of animals* (perhaps with a particular emphasis on mammals) have tended to play in Western cultures, and various traditions of Western philosophy. "Animalities" also refers physical animals (breathing animal bodies), wild and domestic, and the rolls they have played in human histories, both exploitative and symbiotic. The pluralization of the term *animalities* refers to the fact that these relationships address multiple subjects, both physically and philosophically. Thus, they defy simple encapsulation, however the prevalence of cultural attitudes about domesticated animals as downtrodden and servile, and wild animals as fodder and pests, tends to be consistent, and finds little counterbalance in the western philosophical cannon prior to the later 20th Century and the advent of the ecology movement[468]

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[467] Julian Wolfreys. *Glossolalia, An Alphabet of Critical Keywords*. Edinburgh University Press. 2003. http://www.academia.edu/3764257/_Animality_Glossolalia_An_Alphabet_of_Critical_Keywords_ed._Julian_Wolfreys_Edinburgh_Edinburgh_University_Press_2003_

[468] This is stated with the acknowledgement that the differing rolls of animals in western cultures have been too varied to afford much generalization, other than through the common denominator of human species-centrism. In other words, even where animals were afforded an exalted, romanticized conceptual position, as with the war horse and others, it tended to reflect that status of the humans involved; and, in the case of the horse, also embodied some of the cruelest practices among human/animal interrelations.

Stephan Budianski. *The Nature of Horses*. 1997

In the preface of Calarco and Atterton's *Animal Philosophies* Peter Singer states:

"Throughout Western civilization non-human animals have been seen has beings of no ethical significance, or at best of very minor significance. Aristotle thought that animals exist for the sake of more rational humans, to provide them with food and clothing. St. Paul asked "Doth God care for oxen?" but it was a rhetorical question - he assumed the answer was obviously no. Later Christian thinkers like Augustine and Aquinas reinforced this view, denying that the suffering of animals is any reason, in itself, for not harming them (the only reason they offered for not being cruel to animals was that it may lead to cruelty to humans; the animals themselves were of no account).

Most Western philosophers accepted this account. Descartes even denied that animals can suffer. Kant thought only rational beings can be ends in themselves, and animals are mere means. But there were exceptions. Montaigne challenged human arrogance, and Hume thought we owed "gentle usage", although not justice, to animals. The strongest dissent to the dominant view came from the British utilitarian writers, Bentham, Mill, and Sidgwick, each of whom insisted that the suffering of animals mattered in itself. Bentham went so far as to look forward to the day when animals will be recognized as having rights. But even the classical utilitarians relegated their comments on animals to the margins of their philosophical writings. Their thinking was instrumental in leading to laws that sought to prohibit gross acts of cruelty to animals, but it did not lead to the reconsideration of the assumption of the priority of human interests when they conflicted with the interests of animals."[469]

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http://books.google.com/books?id=266YZUrbG00C&pg=PA50&dq=dereivka+horse&hl=en&sa=X&ei=70XCUpfrN4rmoASC84DgCQ&ved=0CEEQ6AEwBA#v=onepage&q=dereivka%20horse&f=false

[469] Matthew Calarco, Peter Atterton (Ed.). *Animal Philosophy, Essential Readings in Continental Thought.* Continuum. London/New York. 2004.

http://books.google.com/books?id=P-vrCZWj4Z4C&printsec=frontcover&dq=animals+in+philosophy&hl=en&sa=X&ei=CT7

Young's writings on animalities have attempted to exceeded (topical) discussions of 'animal ethics' in relation to the Western philosophical cannon, however. Focusing on Martin Heidegger's assertion that the animal is *weltarm* - "poor in world," and thus, not only of lesser value, but literally of lesser existence (Being) than humans, Young has extensively researched the varying rolls of animals and animal concepts in Western philosophy. In an attempt to configure potentially new questions about animalities, along with critiques of existing philosophical conventions, this work has spilled over into various modes of art praxis that has created some intersections with soils. As described in Chapter 2, the presence of micro and macro-fauna is a determining condition of the designation of a soil body as *soil* (vs. mere "dirt") according to most scientific definitions. The fact that *animal studies,* as an emergent branch of Western philosophy, defies (monolithic) generalization also places it in excess of a dissertation focused on soils, however, scientifically, animalities and soils are virtually inextricable on a physical level. And, as Professor Young and I have worked together over the past four years, we have brought our own interests, research, and inspiration to bear independently, and have allowed the collaborative projects to lead where they might. Thus, I have referenced Young's work in its contribution to the praxis of our projects, but will not attempt to detail the independent theoretical research that he brings to it here.

CUs7dJ8vtoASotAI&ved=0CEgQ6AEwAA#v=onepage&q=animals%20in%20philosophy&f=false

Our animalities projects have been motivated by the desire to work directly with non-human animals in collaboration and cooperation. We began by painting on dairy cows with the help of Charlie Dotti (Dotti Brothers Dairy, Sebastopol), Becky Denise (Petaluma), and John Bucher of Bucher Dairy in Healdsburg[470]. During our painting sessions, the cows were not coerced into staying put (other than by food offerings), and they would periodically walk away. Hours of painting were determined by the cow's patience and willingness to continue. In the early stages of these projects we started with painting abstract compositions as experiments, and for learning the process of working with the cows. The paint we used was egg tempera made with eggs from our own chickens. It had the unexpected result of attracting flies, which, along with the Annie's swishing tail, added further elements to the paintings.

Following our initial success with Annie, the first cow of Charlie Dotti's herd, I arranged a *Field Concert* at Bucher Dairy wherein the Healdsburg school orchestra went into a field and began playing quietly while sitting on bails of alfalfa. Cows were released into the field, who surrounded the musicians, and began eating the hay. The concert was documented on video and was incorporated into a grant-based collaboration between Healdsburg High School, the Sonoma County Arts Council, and the Media Department at Sonoma State University (Youth Arts Sonoma Projects).[471] (See Figure 6-17).

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[470] https://www.facebook.com/pages/Dotti-Brothers-Dairy/193475897338826 (viewed December, 2013)
http://cloverstornetta.com/our-story/family-farms-2/bucher-farms/ (viewed December, 2013)

[471] http://www.sonomaarts.com/artscouncilsc_arts_education

The next phase involved bringing cows on to campus so that students could paint on them as well. Images painted on the cows by students ranged from digestive systems, to street style graffiti, to hamburgers[472]. The painting process was filmed, and then one of

(Viewed December, 2013)
Youth Arts Sonoma
http://www.youtube.com/watch?v=CHydcBT4ZpY

[472] We were aware that our work was concurrent with Banksy's paintings on cows, though we consider our work to be in a different vein.
http://news.bbc.co.uk/2/hi/entertainment/3077217.stm
(viewed December, 2013).

Figure 6-17

Animalities Field Concert
(Randy Masselink Conducting)

Bucher Dairy, Healdsburg, Ca
2009

the cows was brought into a classroom where the video of painting on her side was, in turn, projected onto her (see figure 6-18). Everything went well until she peed on the floor, creating a slippery spot on the concrete that caused her some alarm. She had to be

taken outside and walked around for half an hour until we could get her back in the room and finish filming.

Figure 6-18

Animalities
Class Cow Projection

Healdsburg, Ca
2009

Shipwrecks

Our focus here has been specifically on the USS Macon (Zeppelin Rigid Ship) ZRS-5. Zeppelins may seem an unlikely subject for a discussion of soils and ecology, but the Naval Air Station, Moffett Field (San Jose/Sunnyvale, California in the South Bay) was its home base, and is among the super-fund sites that our soil projects have referenced in relation to *Futurefarmers* and other "toxicology" pieces.[473] Perhaps more importantly with regard to Young's research, the zeppelin, in its spectacular bulk (and inefficiencies) characterizes an historical moment in the trajectory of industrial technology, accompanying a naive sense of "bigger is better", and an aesthetic of excess.[474]

The era of the USS Macon's construction in the early 1930's corresponded with early stages of the Green Revolution, the large-scale production of chemical nitrates, initially developed for military explosives, and with the opening events of WW2. It also corresponded to early genetic experiments with plants and animals, notably, the attempts by the Heck Brothers in Germany to back-breed the extinct Auroch that they considered

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[473] Futurefarmers. Gardening Superfund Sites, Silicon Valley, California. http://www.futurefarmers.com/superfund/ (viewed December 2013).

[474] The USS Macon was larger than the Titanic, and like its sister ship, the USS Akron ZRS-4, held some of the same promise and, perhaps, arrogance until it crashed.

http://www.airships.net/us-navy-rigid-airships/uss-akron-macon/uss-akron (viewed July, 2013)
http://www.airships.net/us-navy-rigid-airships/uss-akron-crash-officers-crew
http://www.airships.net/us-navy-rigid-airships/uss-macon-officers-crew

to be the original German cow.[475] The Macon's construction, as the last of the great rigid air-ships, corresponded to a time of modernist utopianism, for some, overshadowed perhaps by the mechanized results of WW1, and the deaths of many of the Futurists therein.[476] According to Young,

"The zeppelin represents what Wordsworth would call the 'high argument.' The age of the zeppelins was also the age of High Modernism. Utopian modernism "fell" to fascism, Stalinism, and American capitalism. The theorist Perry Anderson said that the (utopian) projects of modernism have yet to be realized. Fredric Jameson makes similar points. One could say we are trying to ignite a virtual promise yet to be realized."[477]

The Macon crashed in the ocean a few miles off the coast of Point Sur (Monterey), California in February, 1935 and sank in fifteen hundred feet of water. Herbert Wiley, the commanding officer on the flight, had been only one of three survivors of the Macon's sister ship (USS Akron ZRS-4) that crashed in the Atlantic two years earlier. Two crew members perished out of the seventy-six men aboard. The crash was a result of the loss of one of its tailfins in a storm after hasty repairs had been done, and the risky flight was pushed by a desire on the part of officers in the rigid airship program to prove the zeppelins useful when the Navy was beginning to question their

[475] http://content.time.com/time/health/article/0,8599,1961918,00.html
http://breedingback.blogspot.com/2013/06/heck-cattle-bred-back-aurochs-total.html
(viewed December 2013).
[476]http://www.cartage.org.lb/en/themes/arts/scultpureplastic/SculptureHistory/European20thCentury/Futuristsculpture/WhatisFuturism/WhatisFuturism.htm
http://vserver1.cscs.lsa.umich.edu/~crshalizi/T4PM/futurist-manifesto.html
http://www.theartstory.org/movement-futurism.htm

value[478]. When the tailfin was ripped away it ruptured a helium cell, causing a loss of buoyancy. The crew was ordered to throw ballast overboard as fast as possible, causing it to rise beyond its altitude limit of one vertical mile, exacerbating the helium leakage, following which it descended into the sea. The crash of the Macon could be a metaphor for the crash of some of the promise industrial technology, and its arrogance in attempting to assert human control over environmental forces, expecting predictable outcomes.

Meteorologically, the crash site is probably no coincidence. The profile of the Monterey coast is a result of glacial scouring, wherein a shelf of shallow water extends out a couple of miles from shore and then suddenly drops in steep canyons to over two miles in depth. The resulting upwelling of cold water into warmer currents results in some of the richest marine biodiversity in the world, and consistently extreme weather.[479]

At the outset of the project we were not sure of the relationships between all of the seemingly disparate elements, but by letting the projects run their course, many of the primary elements fell together. For Young, the relationships between animalities and technology had already been a critical part of his research. From Bernard Stiegler's statement that "the human and the tool invented each other", it follows that some domesticated animals wouldn't exist as such without humans, nor would various chapters

[478] http://www.history.navy.mil/photos/ac-usn22/z-types/zrs5.htm
[479] http://www.pointsur.org/overtheyears2.html
http://www.tourism-review.com/travel-tourism-magazine-monterey-bay-discover-the-depth-of-kelp-forest--category1948 (viewed November, 2013).

in human history have proceeded as they did without symbiotic animal relationships (not to mention our dependence on them in broader environmental ways). Thus, to the extent that technology may be understood as artifice, the (systematic) domestication of animals, whether by trial and error, or other methodologies renders some species as direct 'technological products' (results). This in turn carries some potential philosophical ramifications for human self-concept in relation to them, at least to the extent that we are mutually interdependent in certain contexts.

In 2010 Young and I began to expand our repertoire thanks to Mary Pettis-Sarley (Five Looking West), who set up a painting on Dawn, a horse (see figure 6-19) on her ranch in Napa, California. *Painting With Dawn* was a more multi-layered and experientially intense piece than the cow paintings had been. Horses are much faster than cows. The last time Mary had tried to ride Dawn she had been thrown off and suffered a dislocated pelvis. However, as long as no saddle was involved, Dawn seemed quite content to be brushed, fed, and painted. For added calmness there were two other animals close by, another horse (Dawn's mother) and a goat named Gladys.

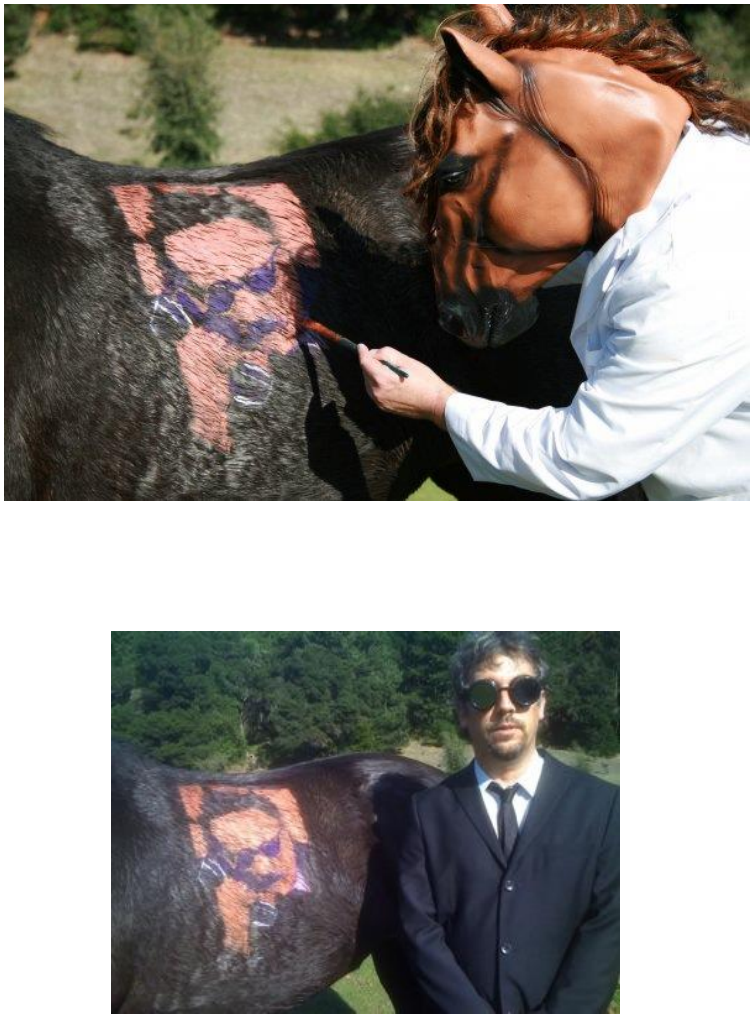
Our idea had been to put Frederick Nietzsche and Walter Benjamin "into conversation on animalities", literally on either side of Dawn. Nietzsche's episode in 1889 in Turin (from which he never returned to full sanity) was, at least anecdotally, facilitated by witnessing horse being whipped by a coachman on the Piazza Carlo Alberto[480]. As the

[480] http://plato.stanford.edu/entries/nietzsche/

story goes, Nietzsche collapsed on the horse, throwing his arms around its neck in what Kundera describes as "an apology for Descartes"[481]

[481] Milan Kundera. *The Unbearable Lightness of Being*. Harper/Collins. New York, NY. 1984

Figure 6-19



Painting with Dawn
Napa, Ca

2010

"On January 3 Friedrich Nietzsche witnesses the whipping of a horse in Piazza Carlo Alberto. 'You inhumane, you bully of beasts and thinking beings, slaughterer of this steed!' says. The coachman, afraid, retracts. Nietzsche bends and embraces the horse, moved, excited, as after years of adventurous and vain research he has found a brother lost in a shipwreck. Then he collapses on the sidewalk. After this episode, Nietzsche becomes mentally unstable and will remain in the care of his mother and sister until his death in 1900. I investigated many of Turin's libraries and archives, where I found numerous tidbits about Nietzsche's life in Italy, though no official reports documenting this curious event. Despite this lack of confirmation, I read this anecdote, whether invented or not, as a symbolic point of entry into the debate on Nature versus Culture as well a good introductory image for an ecological thinking."[482]

The fact that Nietzsche's younger brother had been lost in a shipwreck on the same date as his collapse created another tie-in for the project.[483] Our first attempt to physically reach the location of the USS Macon wreck site was also originally scheduled for January 3rd.

While Benjamin's writings on animals (as exemplars for various aspects of his thinking on historicity and violence), exceeds the scope of this dissertation, Young's work has been engaged with these concepts as they related to animalities and technology for many years. Collaboratively, our interest was particularly in Benjamin's descriptions of art as related to his notion of a radically open ended aesthetic that would defy hermetic closure, becoming "completely useless for the purposes of Fascism."[484] Especially in light of our ongoing inability to reach the Macon physically, we were attracted to the idea of a project that either would not or could not reach predictable closure. The

[482] http://www.serenaporrati.com/nietzsche-in-turin.html
[483] http://www2.fiu.edu/~grenierg/nietzsche_bio.html
[484] Walter Benjamin. *The Work of Art in the Age of Mechanical Reproduction*.

"conversation" between Nietzsche and Benjamin literally *on* animalities is one that we have "determined" will be described through our ongoing actions rather than explication, "putting the horse before Descartes", and allowing animalities, to guide the direction of the projects to as great a degree as possible.[485] In the spirit of this open-endedness we have continued to throw the I-Ching as part of our decision making process, and have done meditative sittings with animals as a process of asking for subliminal suggestions.

Nietzsche and Benjamin's portraits on Dawn were connected by a telephone wire, as well as both being on Dawn's breathing surface, while Dawn was "in on the conversation" with a connecting wire and a pair of aviation headphones. Dawn was not tethered and since Young and I have no experience with horses whatsoever, the process of painting required deep concentration in order to maintain calm, both with us, and the horse. The direct shamanic work that I had been doing in the course of this research, and Young's sittings at the San Francisco Zen Center during this time, were helpful, especially when hurdles arose.

Horse's skin is very mobile, and while the painting with Benjamin's stencil went well, Dawn's twitching damaged the Nietzsche stencil almost beyond use. While painting, I was wearing a rubber horse mask and could see very little. We were worried about the horse head scaring Dawn, so everything proceeded very slowly. While painting, I was holding my hand against Dawn's neck to keep her from swinging around and hitting me with her head. Through this haptic 'communication' process, I was also

[485] Bernard Rollin. *Putting the Horse Before Descartes (My Life's Work on Behalf of Animals).* Temple University Press. Philadelphia, Pa. 2011.

trying to project as great a state of calm as I could. However, at one point Dawn spooked and left at a gallop. I couldn't see anything, but felt the ground shaking. It took an hour and a bag of carrots to get back to work.

Once finished and photographed, Dawn rejoined the rest of the horses on the ranch. We forgot to take off the headphones and they were shaken off somewhere in the field. Upon consulting with Jack Burns, a professional horse trainer in Sonoma County, we found that what we had done closely followed what is considered best practice, especially with regard to concentrating on our own state of mind in the process.[486] Horse's backs are quite sensitive, and from long experience, Burns believes that physical contact with their bodies is communicative of a person's state of mind. As he put it, "if you hadn't approached it as you did, everything could have been trampled pretty easily."

What we felt to be the successes of the animal paintings inspired us to try to make haptic contact with the USS Macon in order to extend the reach of the project to include intersections with technologies and chronological (historical) moments. The first idea had been to "bring the Macon home" with a transfer of dirt from Naval Air Station Moffett Field (its home base) to the wreck site eighty-five miles away. We conceived of dropping a brick of Moffett dirt down to the wreck site such that it would, in part, "become" Moffett Field, at least on a purely (minutely) physical level. But just as causing soil to become mobile designates it as "dirt" and alters its long-term behavior, the "return" of the Macon would not have been a literal homecoming, nor a symbolic return

[486] Jack Burns, Horse Training.
http://jbequine.com/

of an 'intact' industrial promise (as, for example, the liberation of humanity from drudgery and want through chemistry and mechanization). We conceived of it instead as more akin to Nietzsche's "eternal return", or, rather the "radical return of difference" as described by Deleuze.[487] Herein a "return" would signal a different ('industrial') future, inaugurated on behalf of animalities, wherein the reintegration of technology and *poiesis* called for by Bernard Stiegler would be part of its inner workings.[488] This playing with the question of 'splicing of location' was in the vein of what I had encountered in some of the *Jangseung* projects with Five Looking West in terms of potential mobility of "place."

Haptic contact with the Macon would have been virtual, or at least through a wire, as the wreck is fifteen hundred feet below the ocean surface and several miles from shore off the coast of Point Sur. However, from the beginning, we were beset with challenges and a series of strange coincidences that have continued to thwart any efforts to get close. The wreck site is a military secret, though through extensive searching we were able to find it. Knowing the approximate depth based on news reports from 1935, and the Monterey Bay Aquarium Research Institute expedition in 2006, we started with physical bottom charts in order to find a range of potential locations.[489] However, the day before I went to the West Marine store in Monterey to find a chart, someone driving down the city street at 90 mph had rammed through the store and destroyed half of it, including the

[487] http://www.iep.utm.edu/deleuze/#SH3c
(viewed December, 2013)
[488] Bernard Stiegler. *Technics and Time*. Stanford University Press. 1994/1998
[489] http://www.mbari.org/news/news_releases/2006/macon.html
(viewed October, 2013)

chart rack.[490] We ordered a chart online, and later, thanks to Google Earth we pinpointed the location in a canyon whose distance from shore matched the 1935 news reports. MBARI's first attempt to find it with a formal expedition was unsuccessful, but after getting a tip from a local fisherman who caught some of the wreckage in a dragnet, they located, mapped and photographed it in 2006.[491] According to the expedition description they had found the wreck on a flat sandy area on the steep slope of the canyon, which Google Earth can indicate by going to the known depth. Looking at the chart on display at the NAS Moffett Museum with some of the fisherman's markings on it confirmed that we had found the right place.

While finding it had taken a year of searching, getting there physically turned out to be much more challenging. The wreck site is several miles from shore at Point Sur, and 30 miles south of the nearest boat launch in Monterey. Aside from the nearly prohibitive expense of chartering a boat to make the trip, it is an area notorious for unpredictable, rough conditions. Our first reservation in January 2010 was cancelled at the last minute by the boat captain due to high winds, as was another in April of that year. During the last three years we have scheduled seven attempts, all cancelled at short notice due to weather.

Our original plan had been to go to the location and simply drop a quantity of NAS Moffett dirt as an "offering" of location, document the process, and move on to the

[490] http://www.topix.com/forum/city/monterey-ca/T5ATNJLP643U3HJUQ (Viewed December, 2013)
[491] http://www.mbari.org/news/news_releases/2006/macon-images-high.html

next phase, whatever it turned out to be. As time went on the ambitions grew and began involving sculptural art pieces. The first was to be a hydrophone, which we hoped would obtain audio recordings from the wreck site. Not only did this seem a rather unique approach to a shipwreck, but, practically, we did not have the resources to replicate MBARI's expedition with remote undersea vehicles and cameras (MBARI had not made audio recordings on the bottom). Our challenge was to build a casing for an inexpensive hydrophone (usually not rated for below thirty feet, one atmosphere, in depth) that would withstand the 650 pounds per square inch pressure at 1500 feet below the surface. In a phone conversation with one of the staff at MBARI, I was told that it probably couldn't be done "off of a hardware store shelf." The other challenge was to recover data from the bottom without having a live feed. Thus, we settled on the idea of encasing a recorder in heavy steel, dropping it on a tether, and then pulling it back up. At best, we expected to get the sound of it hitting bottom, but that would have at least been a documentation of site-specific contact with the wreck.

For additional sound, and to get some data about the pressure that the 'probe' was experiencing on the way down we added "implodometers" (a can of oysters and a jar of clams) whose burst depth could be recorded. Pictures from MBARI showed large fish in the vicinity of the wreck, and the implodometers would also offer-up something, and perhaps attract sea life to the object.

Our first attempt was with the *Telepathic Zeppelin Remote Audio* device, *TZARA* (see figure 6-20). "Telepathic" in this case referred to the haptic, non-verbal, contact with

Dawn that had been an important part of the painting process, and the over-all experience of working in cooperation with forces outside of our control. Our contact with the wreck

Figure 6-20

Telepathic Zeppelin Remote Audio
TZARA
Steel
16"x14"

(Diving with TZARA)
Monterey Bay, Ca

site would be remote, but connected through hand contact with the tether that held *TZARA* and would, hopefully, allow for its recovery. As with all other attempts, however, the trip was cancelled at short notice, and out of frustration we attempted to go in from shore to at least document *TZARA* being in rough proximity to the Macon, and to get some preliminary audio recording. I went in at a busy dive spot next to the Monterey pier with a tank labeled HYDROGEN (as a nod to the Hindenburg), the *TZARA*, and a bag of Moffett dirt (see figure 6-20).[492] This afforded the opportunity to try to explain some of the project to a group of dive students whose instructor approached us out of concern that the label was real.

As it was, the dive went badly. Monterey Bay is very shallow until it drops steeply a couple of miles out. By the time I reached about twenty-five feet of depth I was hundreds of feet from shore, carrying the thirty-five pound sculpture, and already tired. I went to the bottom with *TZARA* and found that I had forgotten my camera along with gear in an inner-tube on the surface. When I went back up for it, I found that because I was weighted for fresh water (I had done my licensing in Lake Tahoe) I couldn't get back down without the weight of the sculpture. I was able to pull down using the tether, but when I got to the bottom I checked my gages and found that I had already been out for forty-five minutes and was low on air. Because I was alone, and in the interest of safety, I decided to run for shore. *TZARA* had to remain on the bottom. In hindsight I could have left my inner-tube tethered and gone back later, but was trying to avoid panic, and

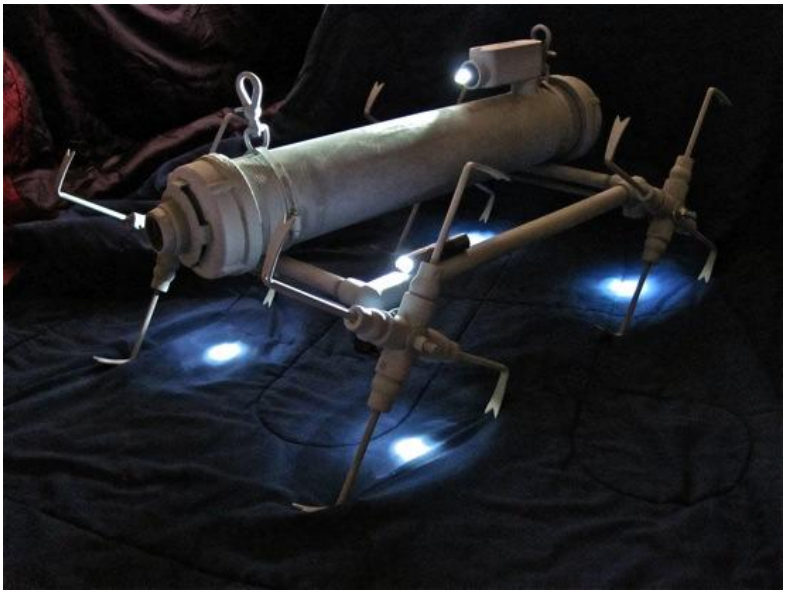
[492] http://www.answers.com/topic/why-did-the-hindenburg-use-hydrogen-to-keep-afloat (viewed August, 2013).

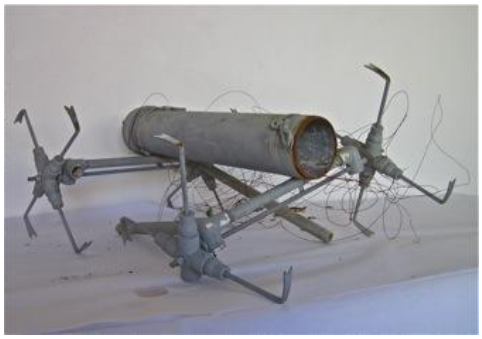
wanted the tube in case I got into trouble on the way back to shore. That area is one of the most dived-on locations in the US, and it is likely that *TZARA* has been seen by others. A want ad was mailed to local dive shops and posted on diver's blogs for some time afterwards but no response was ever received.

Undeterred, we built another version, the *TZARA-2*, and continued trying to schedule trips to Point Sur (6-21). The main update was walking gear that was to help the sculpture move across the bottom, and across the beach to avoid so much exhausting carrying. In order to make room for it, the sculpture had to be made longer, which added considerably to its weight. The second attempt involved going directly to Point Sur. We hoped to bring Dawn and Gladys, but that proved impractical. However, by coincidence, Andrew Molera State Park at Point Sur rents horses, so we were able to work with a proxy-Dawn (Starry), and a sculptural goat repurposed from another project as *Gladys-2* (see figure 6-22).[493] Young was to be on horseback overlooking the Macon crash site while I would take *TZARA-2* out to a shallow depth with a wire that would allow us, including the horse, to listen to the ocean both from above and below. *Gladys-2* was equipped with a marine radio (in a housing made from Moffett dirt), so that if there were any radio signals present we might pick them up, as well as being able to transmit to boats spotted in the Macon's vicinity a few miles out. We were also accompanied on the project by filmmaker Mark Glaeser.[494]

[493] http://molerahorsebacktours.com/
(Viewed August, 2013).
[494] Mark Glaeser. Torrid Productions. HorrorTV 2010.
http://www.youtube.com/watch?v=BgOysVv7000 (Viewed December, 2013).

Figure 6-21





TZARA-2
Steel, PVC
25"x18"

2011

Figure 6-22

Gladys 2
Steel, Bondo, Goatskin, Electronics
38"x18"x12"

Henry the Navigator Monument
Lisbon
2011

Because the stumbling blocks we had encountered were beginning to make the whole project appear somewhat Quixotic, I made a lance and shield for Young to carry during filming. However, Young had never ridden a horse before, and neither he nor Starry were comfortable with the arrangement, so the lance stayed behind. Starry did not like being separated from a larger group that went ahead, and greatly disliked my appearance in scuba gear with the *TZARA-2*. The guide from the Molera Horse Ranch was on a schedule and did not want to wait for everyone to get familiar with each other. During the mile-long walk out to the beach I had to remain out of sight. Two trips were required to get all the gear out to the beach. Once there, she remained fairly calm because other members of her group were close by, and eventually she got used to my appearance.

The ocean entrance was difficult because of a fierce undertow. *ZARA-2* had already been partly damaged by trying to "walk" across a rocky creek bed. The spool holding the wires and tethers became snarled. I used the undertow to help me pull *TZARA-2* out into the ocean, but when the wires snagged, parts of the armature became detached, and then the walking gear was completely wrecked by being dragged across the bottom (see figure 6-22). Exhausted from miles of walking in full scuba gear in deep sand in the ninety degree weather, I was unable to get out of the water easily, and much of Gleaser's video consists of me thrashing around helplessly in the shallow surf until taking off the "hydrogen" tank and crawling out on hands and knees.

Shortly thereafter *TZARA-3* was completed (see figure 6-23). The third version included the features of previous pieces, but added a plexiglass nose, video camera, and 1500 feet of insulated wire to allow for live feed from the hydrophone. However, our concern about the combined events around previous attempts, as well as the ongoing inability to find a boat ride, led us to ask for outside help. By coincidence, around that time I met a neighbor, Marti Spiegelman, who is a professional shamanic practitioner when she attended one of the CAiiA research sessions as a speaker in Lisbon in 2012[495]. As part of my research, I had been attending workshops with Michael Harner, a well-known shamanic teacher, but my efforts to apply what I was learning to the Macon project were proving unsuccessful, and Marti generously offered to help.[496]

In May of 2012, Spiegelman conducted a workshop that, in part, was exploring the use of remote viewing in shamanic practice.[497] Spiegelman used the Macon wreck site as the locale for the workshop with a group of students. According to what she told me later, she and most of the students had remarkably similar experiences of perceiving the area around Point Sur as being one of "great intensity" and "potential danger." Further, that there was an "unwelcoming feeling", even hostility, and that this was an area to be avoided. I do not claim to understand what is at work here, but the Macon wreck site is a cemetery, and, as with the *Dirt Gallery*, the project has always been fraught with

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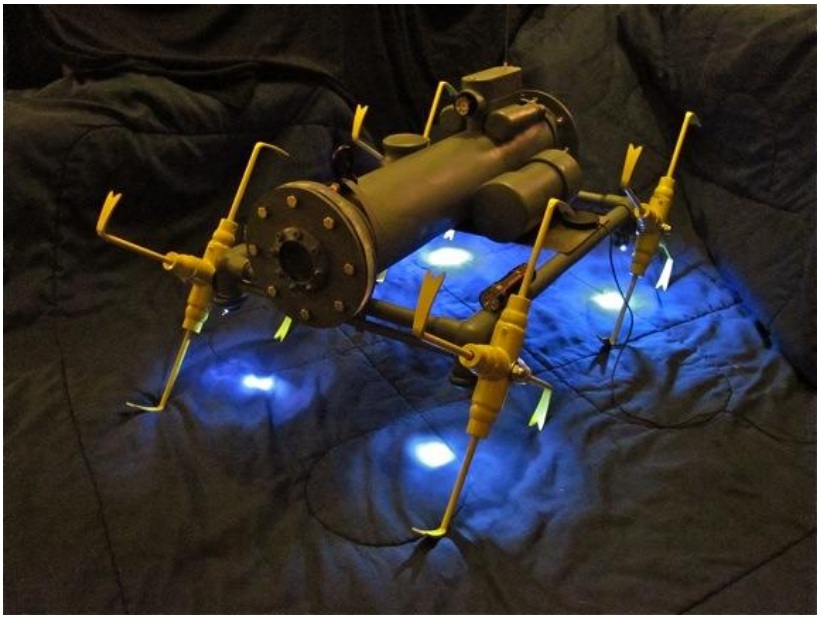
[495] Marti Spiegelman, MFA. Shaman's Light. http://www.martispiegelman.org/home.html (Viewed October, 2013).
[496] Michael Harner. Foundation for Shamanic Studies. http://www.shamanism.org/fssinfo/harnerbio.html (Viewed December, 2013).
[497] http://www.irva.org/remote-viewing/definition.html 9 (Viewed December, 2013).

doubts about its intrusiveness on a variety of levels. Around the same time Young and I threw

Figure 6-23



TZARA-3
Steel, PVC, Electronics
29"x19"x14"

2012

the I-Ching on the location and got the 10 Hexagram (The Razor, "treading on the tail of the tiger") that reiterated almost verbatim what Spiegelman had claimed.[498] In a more recent interview she stated that, "there are areas of intensity like Point Sur, and some people are attracted to them without knowing why. You're lucky that you knew to approach it with humility and not force the issue." However, the draw for Young and I has been compelling. For the same cost as chartering a boat, we talked about hiring a helicopter for an hour and dropping TZARA-3 as a "sacrifice" over the Macon site. Recently we threw the I-Ching on our last-ditch idea and got nearly identical results as the first time.

Listening to the Merced River

In allowing ourselves to be pushed away from the Macon, we conceived of reversing its elevation and exploring what would happen if we took the project into the mountains. Dawn and Gladys' field overlooks the San Francisco Bay, at the south end of which is NAS Moffett Field, along a fairly straight line from the barn to the wreck site 150 miles away. Coincidentally, 150 miles east takes one to the reverse 1500-foot elevation of the wreck at a spot on the Merced River as it flows out of Yosemite Valley. In April of 2012 we planned an installation, which would involve Young being in Yosemite while I was in Gladys's barn with TZARA-3, and we would attempt to exchange signals with various radio equipment. The next day I would proceed to Yosemite and we would photograph TZARA-3 in the river at the 1500-foot elevation.

[498] Nayma Jahan. The Celestial Dragon I Ching. (London : Watkins, 2012)

Part of our original thinking was that if we obtained an audio recording from the wreck site, we would play it for Gladys during a meditative sitting, looking for subliminal suggestions about how to proceed next. Lacking any audio from Point Sur, I decided to try to get whatever oceanic sound I could, and dove with TZARA-3 at a closer location (Doran Beach, Bodega Bay) in Sonoma County. During the dive a 'sleeper wave' flipped my inner-tube and pulled open a Velcro pocket, spilling its contents, including my car keys.[499]

Many hours later in Napa, I arrived while three of Gladys's barn-mates were being taken for a quinceanera (coming of age party).[500] When we entered the barn and started photographing there was a large blood splatter across the wooden slats in the background. Coincidentally, Young was simultaneously broadcasting a reading of Alain Badiou on the bloody end of the Paris Commune from a mountainside at the one-mile flight elevation reached by the Macon before it plunged into the sea.[501]

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[499] http://www.parks.ca.gov/?page_id=23792
(Viewed January, 2014)
[500] http://www.latinamericanstudies.org/latinos/quince-traditions.htm
(Viewed January, 2014)
Mary's ranch is an example of small, compassionately raised livestock suppliers. Many of the animals provide wool, but some are sold for meat.
http://www.fibershed.com/producers/directory/mary-pettis-sarley/
http://www.fibershed.com/2010/12/25/the-art-of-fiber-ranching/
http://www.thedailygreen.com/living-green/definitions/Compassionately-Raised-Meats-Poultry (Viewed November, 2013)
[501] http://libcom.org/taxonomy/term/2674
(Viewed August, 2013).

While in the barn I was with Gladys, her mother, Princess I-Ching, and her daughter Phygelius. After the experience with Starry at Point Sur (not to mention the potential trauma of three other goats being slaughtered on the spot shortly before hand), I expected TZARA-3's presence, and the photo lighting to be disconcerting to them. After the events of the day I had decided not to play the Bodega Bay audio. However, instead of avoiding the lights and sculpture, all three descended on it and began licking it because of the salt residue from the ocean (see figure 6-24). As disastrous as the dive had been it created a rather exceptional, unpredicted photographic opportunity. From this we concluded that playing audio for animal collaborators might not be of interest to them in future pieces, but, rather, bringing in smells and flavors might be more so.[502]

[502] In his essay *Ululation*, Lafadio Hearn suggests that animal contact with liminal entities may not be auditory or visual,
"The old universal belief in the superhuman perceptivities of the creature was a belief justified by fact; but the perceptivities are not visual. Were the howl of a dog really--as once supposed--an outcry of ghostly terror, the meaning might possibly be, "I smell Them!"-- but not, "I see Them!"
http://www.readbookonline.net/readOnLine/44438/
(Viewed January, 2014)

Figure 6-24

Gladys with TZARA-3

Napa, Ca

2012

The following day we did the river installation at 1500-feet elevation, a few miles from the entrance to Yosemite Valley. This consisted of a meditation session where Young was standing in the river, reading, while I was submerged next to TZARA-3, wired to some of our radio equipment (see figures 6-25 and 6-26). This, and similar practices during our projects have been inspired by what Michael Harner describes as "listening with the third ear."[503] "Listening" in this case may be auditory, but more accurately, is an analogy for attempting to cultivate a meditative state of receptivity to what Harner calls "non-ordinary reality."[504] Marti Spiegleman refers to this form of (metaphorical) 'listening' as a heightened (hyper-) attentiveness towards extra-ordinary perception, and the cultivation of increased receptivity to intuitive perception, or, as she states it, "experiential knowledge." Both she and Harner describe meditation, and cultivation of heightened states of attentiveness to one's surroundings as potentially valuable approaches to ecology, perhaps facilitating the cultivation of "intimacies" with soils as described by Vandana Shiva.

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[503] http://www.shamanism.org/fssinfo/harnerbio.html

[504] The Shamanic Knowledge Conservatory (SKC)
This great archive, unique in the world, is preserving endangered shamanic knowledge for future generations. Progress continues at the SKC, under the direction of Michael Harner. With the invaluable work of former FSS research associate Gizelle Rhyon-Berry, a comprehensive catalogue of detailed descriptions of items in the entire Conservatory's Western Collection was prepared. The collection includes nonordinary reality maps, transcriptions, Three-Year student homework, general submissions, and researched data. Description of every item housed at our archive is imperative for locating them efficiently, for preservation, and for possible future interest.

The Foundation has acquired over 65,000 indexed pages related to shamanism and shamanic practices worldwide. There are five categories culled from 396 cultures: shamanic healing, about shamans, cosmology, eschatology, and divination. To ensure the survival of this irreplaceable depository, much of it has been digitally preserved, with copies stored in various locations against a future calamity. In addition to the indexed pages, the collection contains books, manuscripts, artifacts, drums, and various audio-visual media. Though much has been accomplished, much more work remains to be done to properly catalog and preserve this invaluable collection of shamanic knowledge".

Figure 6-25

Listening to the Merced River
Yosemite, Ca

2012

Figure 6-26

Listening to the Merced River
Yosemite, Ca

2012

Emersion in the river was also accompanied by the release of a small amount of Moffett dirt. The results of the event/installation remained unspecific, as, at the time it was not done with a particular task in mind. The resulting photographs documented an exploratory activity. We hoped that there would be discoveries on one level or other, but there was no particular expectation of outcomes.

As it was, several other related projects have come out of the first river installation so far. *Listening to Materialities, Yosemite* (the "monument" installation) was mentioned earlier in the chapter. This was an intersection between the ongoing *animalities and soils* projects with Young, and Five Looking West, for which the first listening rocks were done. The installation was done at an overlook above Yosemite Valley with a view of Half Dome in the background. As a heavily visited spot we were confident of having an audience (which turned out to be a busload of around fifty people). The sculpture was made from a five-foot tall piece of Arizona Field Stone, an armature of heart redwood from a diseased tree that was felled on the Healdsburg High campus, and then hand-cut with a vintage saw from Mendocino County. As with the previous *Listening to Materialities* pieces, it had a mounted pair of noise cancellation headphones and listening instructions (slightly shortened) engraved on a piece of faux bronze mounted at eye level. During the installation I was dressed in a ranger's uniform to add an official appearance to the event. (See Figure 6-27).

Figure 6-27

Listening to Materialities
(Yosemite Valley Installation)
Arizona Flagstone, Redwood, Faux Bronze

2013

The instructional plaque reads as follows:

Listening to Materialities

Instructions:

Don headphones and hold your hand against the rock. Let your mind go quiet and listen deeply. The sound of your own pulse in your ears is no coincidence. Rock is the parent material of Soil, which is our physical origin and destination. The notion of a communication process with "inert" material objects sounds silly to many people in industrialized countries, but it is taken for granted in many other cultures around the world. Understanding what would be involved in a communication process with more-than-human materialities from within a 'scientific'/logo-centric mind-set means broadening one's understanding of 'communication' itself.

For those to whom this would sound like a strange suggestion, the process can be understood as a series of mediated steps. We understand something about Animal languages, such as a warning growl. Animal languages can teach us about Plant languages, such as among those that, when being eaten by caterpillars, put off distress pheromones that attract predators like wasps. From this, we begin to see how to think about systems of inter-relation and interdependency. Plant language can teach us about soilogic language, a language of complex inter-dependencies between materialities, microbes, and mycelium. From this we see that communication is also visual, as in the language of erosion and isostacy.

Soilogic language can teach us the language of the parent material, languages of thermal cycles, glacially slow processes, momentary flashes, bio-chemical inter-dependencies. Whatever this rock may have communicated to you, you have 'communicated' with it by transfer of physical trace materials, and warming it or cooling it with your hand, subtly hastening its weathering process back to soil.

Its appearance as a new "monument", and, perhaps the fact that it was interactive, appeared to add some novelty for those present. Before we were finished putting it in place there was a cue of half a dozen people, and one couple was overheard remarking that they would be the first to try it. Emboldened by the experience of the installation we photographed it, went into the more populated valley, and spent the rest of the afternoon still in uniform, talking to visitors about ecological issues in the park and surrounding forests. We are now planning a series of these installations for Yosemite and other state and national parks. Given their financial plight (which is currently causing closures in California), we are adding donation boxes to them, and will give the keys to the park headquarters.

Shortly thereafter we were invited to participate in the *Carnivale Pataphysique* in San Francisco, organized by Peter Marevales, and sponsored by City Lights Books in San Francisco.[505] The format of the event was based on the "islands" referenced in Alfred Jarry's *The Exploits and Opinions of Dr. Faustroll, Pataphysician,* wherein Faustroll and a companion (Panmuphle) travel in a rowboat on an ocean that is superimposed over the streets of Paris[506]. The story describes various islands that they visit. During the *Carnivale Pataphysique*, these consisted of performances and installations in various parks in the vicinity of City Lights. Our event was in Saint Mary's Square and consisted of wearing the gear that we had used in previous installations, and speaking on our project from a tub of water to around thirty participants from City Lights and the French

505 http://www.citylights.com/info/?fa=event&event_id=1589

506 Alfred Jarry. *The Exploits and Opinions of Dr. Faustroll, Pataphysician*. Exact Change Publishers (by arrangement with Grove Press), Boston, MA. 1996.

Consulate. The water was mixed with French dirt thanks to Jennifer Kanary Nikolova, and slightly "electrified" with batteries.[507] This was in turn wired to TZARA-3 and Gladys-2. As a reference to the Macon, I was wearing a helium tank instead of oxygen, and we used it to fill a high altitude weather balloon during the presentation (see figure 6-28). Following our fifteen minute talk, each member of the audience was given a pinch of French dirt to sprinkle in the tub, keep, or ingest if they chose, in this way declaring the site to "be" France (in perhaps a consular fashion, coupled with the physical dirt), for the duration of the event. From a write-up in the San Francisco Bay Guardian:

"Frederick Young and Linus Lancaster demonstrated their latest attempt to make contact with the USS Macon, a military zeppelin which crashed in the ocean at Point Sur in 1935. Involving a slowly inflating weather balloon, soil from France, a stack of Heidegger texts, and a curious mechanical component best filed under "moves in mysterious ways," (or, rather, doesn't) Young and Lancaster's absurdist experiment was conducted with all appropriate gravity until we were hurried off again to another park."[508]

Following the Carnivale we returned to the Merced River with the "Time Machine" built by Maravelis (supposedly Jarry's bicycle), and three mechanical owls, referring to Jarry's obsession with them, and to accounts that he had them living in his Paris apartment.[509] The river was seeded alternately with Spanish dirt (in reference to

507 http://www.labyrinthpsychotica.org/Labyrinth_Psychotica/CV.html (Viewed December, 2013).
508 Nicole Gluckstern. *The Performant: Paris is learning*. San Francisco Bay Guardian. November 11, 2012. http://www.sfbg.com/pixel_vision/2012/11/11/performant-paris-learning (Viewed October, 2013).

509 Jill Fell. *Alfred Jarry (Critical Lives)*. Reaktion Books Ltd. London. 2010. http://www.3ammagazine.com/3am/finding-alfred-jarry/ (Viewed December, 2013).

Figure 6-28

Carnevale Pataphysique
San Francisco, Ca

November 3, 2012

Benjamin's death in the Pyrenees in 1940), and French dirt while photographing Young on the bicycle (see figure 6-28).

While tracing the potential path followed by the dirt samples (and one of the owls that fell in), we found that the Merced River empties into the San Joaquin River Delta, which in turn meets the Sacramento and the San Francisco Bay near Concord. The Concord trace sparked the idea of the *Suburban Drain*, described earlier with regard to Negativland and intersections with culture Jamming. While this term may be dated, Young and I are increasingly experimenting with pieces that use actual radio signals, and therefor it may have some continued relevancy for these projects.

Listening to Crane Creek

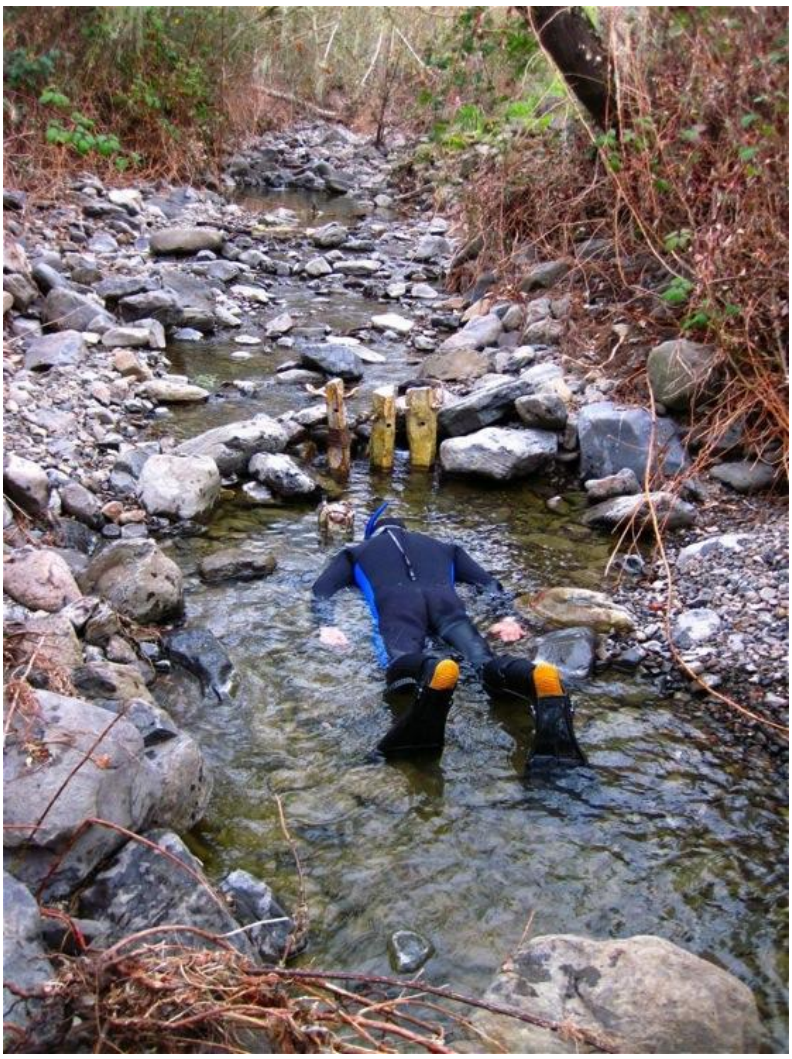
Listening to Crane Creek is an ongoing project stemming out of *Listening to the Merced River* that pursues its meditative practice on a more local, more frequent basis. Where the depth and current of the Merced River has made prolonged submersion and meditative practice physically challenging, Crane Creek is comparatively shallow, allowing for much longer "sittings" (see figure 6-29). The first was with an installation of the *Pedons*, Sonoma Field Stone (Basalt) that covers the hillsides within the park, in February, 2013. There have been several since then.

Meditation while submerged in water can be a unique experience, especially with the presence of a gentle current, and the shallow depth of the creek is ideal for using a snorkel. Another surprise was the extreme cold of the water, even by comparison to the

Merced River, which is mostly snowmelt. However, the wetsuit ensures that there is little danger of hypothermia, and sessions have lasted as long as thirty minutes so far.

Another dimension to the *Listening to Crane Creek* practice is that it has been more public than *Listening to Merced River*. *Listening to the Merced River* with TZARA-3 was unobserved as far as we know. *Listening to the Merced River* (with Jarry's "time machine" and owls) was seen by a few families who were using the river on that day, as it was done during the summer. Crane Creek is a busy park throughout the year by comparison. "Sittings" have been done in front of dozens of park visitors. If the images convey any sense of environmental/situational calm, in reality, I was surrounded by numerous children who were throwing rocks and looking for crayfish. Temujin Licklider, who photographed the first installation, explained it to a few people who approached out of curiosity.

Figure 6-29



Listening to Crane Creek
February, 2012

Chapter Seven

Soils and Interventions

Conclusions

This study has focused on issues regarding the interactions of humans with soil. The exploration of problems relating to the earth's surface has required the inclusion of social, cultural, economic, ethical, technological, and scientific approaches. The reaction to soil is varied, and this is especially the case for cultural variations. It is important that one listens to other cultural practices regarding soil, since the variety of beliefs and patterns open the door to greater flexibility and understanding. This means that the data being consulted is made up of many different interacting elements. These data are filled with difficulties, and layers, so that understanding them is often perplexing.

In contrast to the feelings toward air and water that are elements directly ingested into the body, soil goes through a transformation process before it is available in the form of edible substances. In many cases, "soil" itself merely denotes "dirt" or "dirty." For example, we wash our food to make sure it is clear of any particles of the original complex of soil out of which it grew. Soil, as dirt, may be considered dangerous and the cause of illness. Thus the difficulty of dealing with soil is emotional as well as physical. While at one level there is rejection of soil, it is often, passively, considered to be inexhaustible. In this latter concept, little attention is thought to be necessary to preserve it. Given the cultural and psychological aspects relating to this physical element, the question of how to alert people to the significance of the many problems related to soil is

a non-trivial pursuit. Imparting information and changing attitudes requires some means of infusing the individual with a principle or an idea, a sympathy, that brings about an urge to action. One avenue for this vision is art in both its graphic and performative aspects.

As established in the previous chapters, the central problem being discussed is that much of the planet's agriculturally viable soil is imperiled by erosion resulting from exhaustive practices in human agriculture. Other non-cultivated soils are imperiled in numerous areas around the world by desertification from deforestation, overgrazing, and climatological shift. This degradation of non-agricultural soils affects non-human stake-holders and contributes to the well documented species extinction rates as well as, in turn, exacerbating climatological destabilization. Reduced biodiversity diminishes the overall resiliency of ecosystems, which hastens environmental collapse in affected regions. "Collateral damage" such as the loss of pollinators creates additional pressures on other regions, driving the momentum of exhaustive practices. Food systems in industrialized countries are frequently based on centralized distribution systems that are energy intensive. Regional environmental degradation can lengthen distribution systems where non-local relief is sought.[510] Functioning in combination, these factors contribute to soils being among the most imperiled resources for eco-systemic health and species survival on the planet.

[510] The trucking of 60% of the commercial honey bee population of the US to California's Central Valley each spring to keep the almond industry from collapsing is a notable example.

One of the major causes for the practices that exhaust the fertility of soil is population expansion and the economics that accompany the need to feed millions of new members of our earth each year. The focus on human-centric benefits has pushed to one side the protection of other animal species, nature preserves, and care of soils. While endangered species, rainforests, air and water pollution have received considerable attention in recent decades and have been the subjects of some protective legislation, soils seem to be comparative newcomers to many ecological discussions. Their emergent role is despite the fact that their health and viability as food producers has been of interest to farmers for thousands of years. However, the effects of technological advances that have been brought to bear to keep up with rising demands from swelling human and livestock populations have shown that increased soil productivity hastens its exhaustion if practiced solely according to extractive models.

There is a long history to agricultural practices. While aggressive farming practices seemed essential for the support of ancient civilizations, especially those that attempted to practice any form of imperialism, these practices created testimonials to soil exhaustion. As demands on the soil to feed growing populations (especially non-producing armies far afield) began to outstrip its resiliency, some common patterns emerged. Populations shrank, decentralized, or relocated. The very practices that can temporarily increase soil's productivity, such as irrigation, are the ultimate causes of damage. As in the case of irrigation, absence of means to re-nourish the soil hastens nutrient depletion. Eventually, salinization can become a problem, which demands more irrigation to rinse salts from the surface. Once the soil becomes over-mineralized, crops

weaken, and the soil itself becomes increasingly susceptible to drought and erosion. In the past, as soils have degraded, societies turned to farming on slopes above river valleys, leading to ever-greater loss of topsoil. Even where resting of cropland was practiced, the fallow soil was susceptible to erosion. Grazers then were used to turn inedible shrubs and stubble to calories for humans, and the complete denuding of topsoil in this manner has often led these societies into sharp decline. Once exhausted, topsoil rarely regenerates at rates faster than one inch every hundred years, i.e., not in a human time scale.

During the mid-20th century, some of the technological advances of the industrial and green revolutions appeared to promise remedies for soil's natural fragilities and contingencies. Exhausted soils could be pumped with nitrogen and phosphate fertilizers, eliminating the need for crop diversity, rotation or manuring. However, nitrate run-off has contributed to extensive degradation of river ecosystems and to dead zones in oceans as a result of algae blooms. Oxygen starvation creates excessive bio-fall on the ocean floors, which becomes a self-perpetuating cycle, and in turn produces higher quantities of greenhouse gasses. The development of hybrid crop varieties, such as F1 corn, allowed for denser planting patterns with heavier stalks that are able to support larger yield and are compatible with mechanized harvesting. The excess biomass could be turned into silage to support livestock populations, or, more recently, bio-fuels. Unfortunately, mechanized agriculture has had other effects as well. Petroleum intensive and factory farming contributes significantly to climate change.[511] Heavy equipment is expensive and

[511] 8% in the US, nearly 20% worldwide.
http://www.epa.gov/climatechange/ghgemissions/sources/agriculture.html (Viewed 12/30/13).
Food and Agriculture Organization of the United Nations
http://www.fao.org/ag/magazine/0612sp1.htm (Viewed 12/30/13).

establishes debt cycles for farmers and that require greater productivity from the cropland. The equipment which was seen as a labor saving device for workers has the downside of compressing soil, and this in turn calls for deeper or more frequent plowing. Such exposure of deeper levels of soil increases loss of soils through erosion. Harrowing for weed abatement releases greenhouse gases and contributes to erosion. All of these unintended consequences have brought current farming practice and strategies into doubt.

As has been reported in the chapters of this study, natural processes are required for the rejuvenation process. Use of nitrates and phosphates to prop up soil's agricultural productivity, once thought to be the solution, do not mimic the breadth of nature's complexity. Mono-cropping, a major practice for industrial farming is found to encourage the growth of pests and pathogens. Along with mono-cropping comes a general biodiversity decline, and the result is diminishing yields among both hybrid and GMO crop varieties. Along with mono-cropping has come a significant increase in the use of chemical pesticides. Another addition to the suite of chemicals needed for current farming has been herbicides. This is a contemporary application of chemicals to a farmed crop, and it is a practice that has no long-term history. However, within a few years uncultivated plants, often called “weeds,” became resistant. Just as insects have developed resistance to chemical toxins, so too plants show a similar ability, against stated claims by manufacturers such as Monsanto. Much of the cropland in the US is currently supporting herbicide resistant "super-weeds." Ironically, as diversity declines

for the food plants, the competitive ones that survive the herbicide practices are growing stronger.

There have been concerted efforts on the part of many individuals and organizations to gain a greater understanding of soils and their dynamics, not only for human benefit, but also for greater conservation of planetary health as a whole. While examples of these efforts and their precursors date back to antiquity, they became more historically prominent beginning in the 19th Century, both as a result of the scientific advances of the enlightenment and industrial revolution, and in reaction to some the consequences of industrial practice. The beginning of the 20th Century saw some highly visible and effective conservation efforts in Europe and the US, and they have grown since then, coalescing into what became known as the ecology movement in the early 1970's. These loose knit but energetic movements have not stopped environmental degradation, but they have had numerous large successes on behalf of conservation, both in pressuring governments to enact protective legislation, and raising public awareness about the benefits of some conservationist practices. Despite efforts to mitigate the effects of soil loss and degradation on the part of some farmers, the overall numbers continue to show that nation-wide and worldwide erosion and exhaustion rates are still increasing.

As described in chapter four, research being conducted worldwide looked for "best practices" that could make sustainable agriculture viable and effective, even in the face of rising human populations. One conclusion that has emerged from these studies is

the recognition that there is no "silver bullet" that will remedy environmental degradation in all regions of the world. A primary lesson acknowledged by the bulk of peer-reviewed environmental research is that regional issues call for regional treatment. In other words, the resiliency of a given ecosystem will be dependent on its own characteristic diversity, indigenous species, climate, and topography. Hence, most solutions to environmental degradation will arise from, or must work effectively with, regional, local, and micro ecosystems, rather than stemming from attempts to have one set of practices that work in every region. This indicates that interest in, and the development of familiarity (intimacy) with local ecosystems will be increasingly important on the part of farmers, ecologists, and activists, including artists among them.

The most recent report from the UN Commission on Trade and Development (September, 2013), calls unambiguously for the rapid adoption of locally centered, small scaled, organic agricultural systems, not only as a viable remedy for the current state of extractive agricultural practices at large, but as a viable way to address the need to feed growing global populations in many regions. Small and diversified farms can meet the food needs of many nations with reduced use of fertilizer and toxic chemicals.[512] If farming practices change the economic basis for food production and soil use, both will need to be reformed. Such shifts in the approach to soil treatment are still not being reflected in the international world of trade and monetary policies. Mega-trade deals such as the proposed Trans Pacific Partnership (TPP) and the U.S.-EU Trade and

[512] Meyer, Nick. *"Wake Up Before It's Too Late", New UN Report Calls for Dramatic Shift Towards Natural Agriculture"*. Althealthworks. (Viewed 12/30/13). http://althealthworks.com/1366/wake-up-before-its-too-late-new-un-report-calls-for-dramatic-shift-toward-natural-agriculture/(Viewed 12/30/13).

Investment Partnership (TTIP) are based on industrial farming and massive shipments of foods over long distances. The partners in these agreements are multinational corporate and financial firms. They have little interest in small farms or any major shifts away from the current practices that have proved to be financially profitable. The rise in food prices and the practices of speculating on commodities put global security at risk.

In the 21st Century these ecological concerns have become more integrated with civil rights efforts, and have coalesced into environmental justice, food justice, and food sovereignty movements. Largely these are in response to awareness about ongoing environmental degradation, and broader public awareness about populations that have been disproportionately impacted. While the wide range of issues and subjects that may be involved with environmental justice movements are vast and may defy generalization, many are in response to the current environmental state of affairs, and awareness of the relationship between political representation and people's ability to effect societal change. Additionally, there are emerging movements that attempt to bypass traditional channels of power and work entirely at grassroots levels.

Despite the energy and high visibility of these movements in the global arena, in many cases, they face fierce opposition from governments and industry. At the best of times societal changes are slow, but, in the US, there are counter movements on behalf of some political and industrial forces to roll back societal changes that were the subject of the early ecological and civil rights legislation of the 1960's and 70's.

Partly as a result of these efforts in the mid-to-late 20th Century, artist began to play an increasing role in the ecology movement. Starting in the 1970's, there was an increase in interest among many artists in working collaboratively and in cooperation with natural environments and environmental entities. Also during this time (partly due to impatience with the pace of change) various tactics such as pranks, public stunts, guerilla art, and creative sabotage became fairly widespread among artists and activists. These practices were not new to art, having precedent in Situationist and Surrealist movements, and further back in various forms of social satire. However, the 1970's, witnessed some fairly new intersections between activism and artistic and public media, especially in combination with television and growing telecommunications.

Specific effectiveness of interventionist art can be difficult to determine. An assessment of what began in the last century indicates that artists were often partners and leaders at the center of ecological movements. There are many stories of participation that might be interpreted as limitations of the effectiveness of these efforts. For example, Reverend Billy did not singlehandedly get Chase Bank to divest from mountain top removal. However, he did manage to become a highly visible contributor with a unique way to garner support. The Yes Men did not succeed in getting Dow to compensate the victims of Bhopal, but did succeed in creating temporary of loss of equanimity for the management of the corporation. Of even greater import, such incidents were readily received by journalists, media, and perhaps the public, as a reminder that compensation for victims remains unpaid. It is telling that while Dow suffered a significant, though temporary financial consequence, it did not prosecute the Yes Men. While it might be

said that these performances exceed the bounds or limits prescribed by authority, the inordinate nature of the acts managed, if in a limited way, to break through the walls of silence and indifference. It is no small thing that these artists have managed to bring about public awareness through humor and wit rather than violence or destruction. Igor Vamos (Yes Men) told me in a recent interview: "people are hungry for most anything that is entertaining." The news outlets have niches for strange, humorous events that are not similarly open to social or environmental activism. It also can buffer you from some of the lash-back of stepping outside of conventional practices, because it diminishes the appearance of malicious intent. Sabotage can galvanize public opinion against particular individuals and groups, though there have been instances where it stopped targeted actions in particular regions. On the other hand, the use of humor can also add public appeal, diminish public fear over particular actions, and garner greater media attention.

As the research and practice that has gone into this dissertation goes forward, we anticipate continuing in the future to pursue interventionism on increasingly active levels. The Yes Lab, which provides an online template for organizing and fundraising, has been launched as of December, 2013 and is now available to artists. As part of animality art, my students and I have been doing flash-mobs in cow suits for several years. We have submitting a proposal to Yes Lab for funds to mount an event which will break the world record for the number of people in cow suits, which currently stands at 250. Commercial painting suits made for workers by Tyvek (owned by Dow), are used and embellished with our art renderings of iconic cows. As part of our attempt to garner public interest, we will ask Dow to donate the suits so students can break a world record. Our stratagem will

be to advertise the Dow support while doing a walk-a-thon to raise money for some of the victims of Dow's activities, including those of Bhopal.

The art activities presented in the preceding chapters: Five Looking West, *Animalities, Soils, and Shipwrecks, Soil Transfers*, *Listening* projects and others will continue. They address a number of issues, including ways of using traditional and often neglected aspects of Asian culture in an international arena, the destructive activities at sites such as the naval construction at Jeju Island, incorporating soil from consulates that has been officially "removed" from the local nation and assigned to a distant one, and using the metaphor of "healing" natural phenomena such as the San Andreas Earthquake Fault. All of these have an element of subterfuge, sometimes deceptive and other times mystifying. These art acts and objects are all aimed at accomplishing an end, or moving in entirely unexpected directions, without always betraying our intention. While most of the activity is made public, there are behind the scene practices that might be considered 'pure' research. What is the result of an unobserved installation, which is considered to be an experimental exploration with unspecific outcomes? Will it lead to new insights, new projects, or new publication opportunities? In some cases, we will try acts for which no expectations have been assigned. One of our next projects of pure exploration will involve radio transmissions from the historic Marconi transmission station in Bolinas, California, to the next receiving station in Marshal a few miles away. Once at the center of international communication across the Pacific these past relics of moribund technology provide a "canvas" for emerging art projects and research. If we succeed in picking up and recording any signals, the project may begin to move towards

incorporating *sound art*, which our research has only touched upon but not yet incorporated. We believe that our insistence on keeping the direction of the projects open-ended and spontaneous will maintain the potential for them to move in new and interesting ways.

Through these ongoing activities, we are directly or indirectly prompting and inspiring new pieces. One of the lessons that we learn is the importance of teamwork and community. Projects such as those described in this research often require more than an individual artist working alone. In order for these activities to succeed, there must be a growing circle of groups and organizations that work with artists to generate new projects. The goal of such groups is to bring positive change on behalf of soils and the environment. As Vandana Shiva reiterated in a recent, brief conversation at the Heirloom Festival in Santa Rosa: "The best thing we can do for soils is to begin to think of them as family, and think about what it will mean to begin behaving accordingly towards them. The 'next thing' will be building new relationships that will add to the resiliency and sustainability of local communities." For us, building new collaborations with other artists and scholars is part of how we believe that we can contribute to positive change on behalf of soils, animalities, and the world as a whole.

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